

Greenlink Transit Vision and Master Plan

Draft Final Report

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Introduction

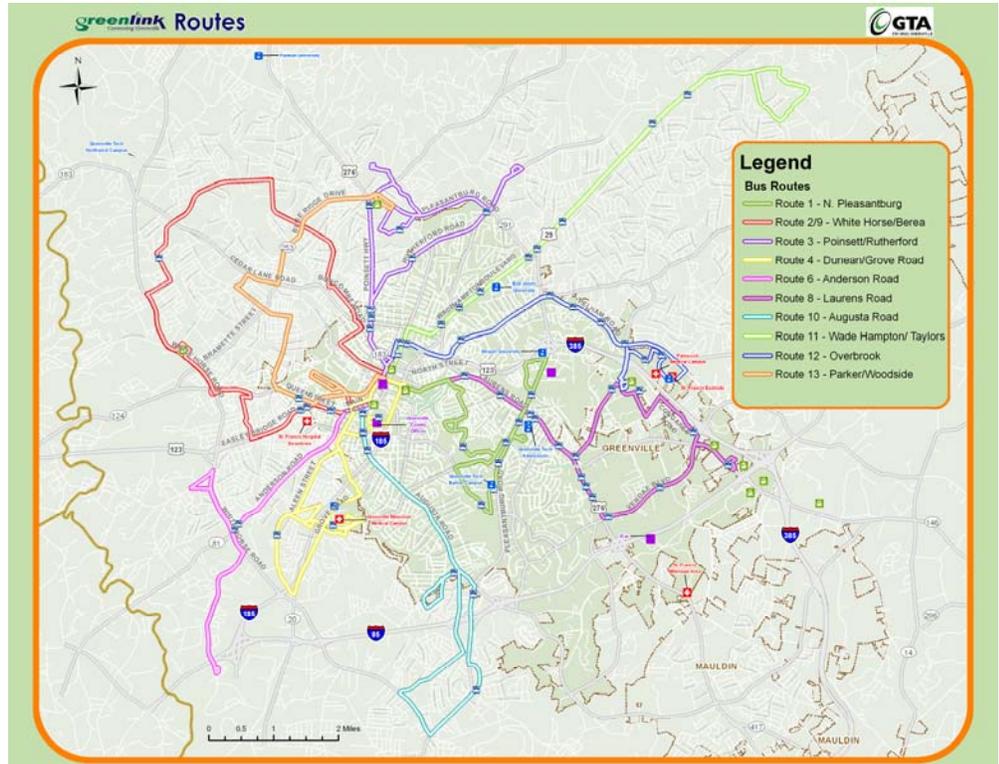
Transit services have been operated in Greenville for over 100 years. Since 1974, the system has been operated under the Greenville Transit Authority (GTA). GTA has faced increasing challenges balancing its operating budget.

In late March 2008, the City of Greenville began operating the system under contract with GTA, and the system's brand was subsequently changed to Greenlink. The goals of the City's involvement were to stabilize GTA operations, make incremental transit improvements, and provide for long-term transit planning. In early 2009, Greenlink initiated a strategic planning process to establish the future direction for the system. The resulting **Greenlink Transit Vision and Master Plan** was developed to:

- Establish a long-term transit vision for the community;
- Examine and assess Greenlink to develop specific operational recommendations for near-term, short/mid-term, and long-term implementation; and
- Assist the GTA and its partners to establish transit policies and funding needed to develop a sustainable transit system that meets current needs and which can support future economic and community development.

Funding for this project was provided by the Federal Transit Administration, South Carolina Department of Transportation, Greenville County, and City of Greenville. Additional local sponsors included Bob Jones University, Clemson University, Greenville Technical College, and Furman University.

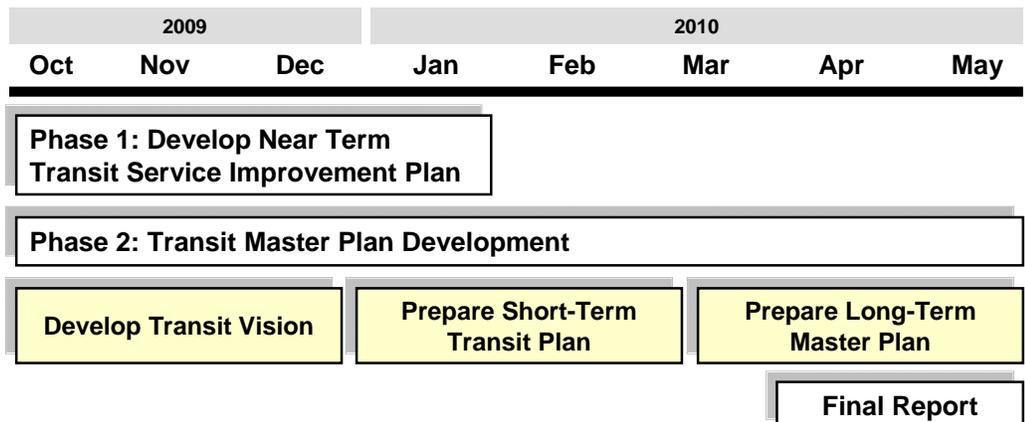
Existing Greenlink System Map



Study Tasks & Schedule

The *Greenlink Transit Vision and Master Plan* was divided into two phases. Phase I focused on establishing the system baseline, collecting and reviewing existing plans and studies, initiating development of the transit vision, and developing near-term

service recommendations. Phase II refined the transit vision and system goals, developed short and long-term recommendations to fulfill the transit vision, and developed an implementation framework, including a funding plan to support implementation.



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Land Use Goals and Recommendations

A **Concept Land Use Plan** was developed to create a framework for development patterns along the primary transit corridors in the Greenville Region. The Concept Plan is intended to be general in nature and guide policies for the corridors.

Land use and development goals and principles were identified to direct development of the Concept Plan. The land use and development goals are as follows.

Land Use - Provide for a range of housing, retail, employment, and recreation opportunities while strengthening existing neighborhoods; encourage the creation of dynamic, compact activity nodes which avoid/minimize sprawl; and provide a framework for the successful revitalization of underutilized properties along the primary transportation corridors.

Natural Environment - Enhance important ecological and recreational spaces through the expansion of the well established and expanding City/County parks and greenway system while encouraging land use and transportation activities that positively impact land, air, and water quality.

Community Design - Ensure that development and redevelopment is compatible with adjacent uses, while supporting the commu-

nity's vision of vibrant, pedestrian and bicycle-friendly nodes surrounded by stable neighborhoods.

Transportation - Increase the viability of all modes of travel through creating better street connectivity, providing a safer and more comfortable walking/bicycling environment, and positioning future transit investments for successful ridership levels and supportive land uses

The Concept Land Use Plan includes five development areas. The *Regional Node* is characterized by an intense mix of residential and commercial uses oriented around a transit station and/or regional road corridor. The *Central Business District (CBD)* is characterized by a diverse mix of commercial, employment, and civic uses, and housing types. An *Employment District* has larger industrial, office, or other major facilities such as hospitals, manufacturing, warehouses, and flex space. The *Neighborhood Node* includes mixed-use buildings or mixed-use blocks of apartments, townhomes, ground-floor retail, and office uses which primarily serve the surrounding area with a high level of connectivity. *Green Connections* are places where open space connections are preferred for environmental preservation and/or pedestrian and bicycle connection purposes.

Transit Vision and Goals

The **Transit Vision** and supporting **Goals** were developed to guide the system through the implementation of the plan. The vision and goals considered those identified through prior planning initiatives and input received through the plan development.

Plan recommendations support implementation of the Plans' Vision and Goals.

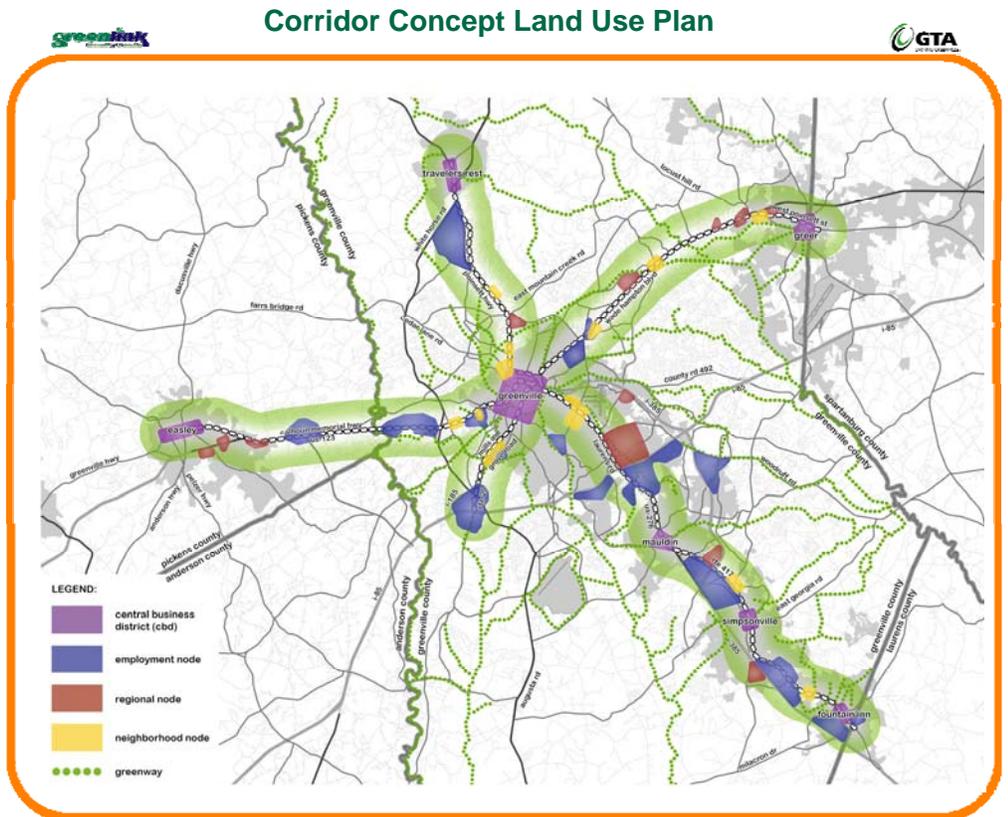
Greenlink Transit Vision

Greenlink supports the mobility, livability, and economic vitality of the Greenville region by:

- Providing convenient, safe, reliable, efficient, and financially sound public transit service, and
- Playing an increasingly important role in the community's transportation system.

Transit Goals

- Provide reliable and convenient service;
- Identify and establish long-term funding plan;
- Expand transit service options and connectivity;
- Increase community and public support through successful, phased service implementation;
- Tailor service to appropriately support and influence travel patterns, land use, and development; and
- Expand regionally.



Transit System and Service Recommendations

Near-Term System Improvements

Near-term service recommendations were identified for Greenlink to undertake within the next one to two years.

System Ride-Check - It is recommended that a ride-check be undertaken as resources allow to obtain meaningful stop level passenger activity, comprehensive route schedule adherence, and other pertinent data,

Paratransit Service Modification - Consideration should be given to providing selected day/scheduled group trips from senior and/or service centers to common shopping or other destinations to effectively balance service demand and resources.

Facilities - A number of modifications are recommended or underway for various Greenlink facilities including:

- Relocating the operating facility;
- Improving aesthetics and lighting at the downtown Transit Center;
- Installing Greenlink bus stop signs on individual/dedicated posts to avoid conflicts with other infrastructure;
- Removing or replacing, as needed, older bus shelters and consider transitioning the bus shelter program to an advertising vendor.

Transit Bus Fleet - Nine older vehicles are currently being replaced. As capital funding opportunities allow, consideration should be given to continuing replacement of the remaining units. In addition, Greenlink should evaluate the potential for expanding exterior bus/van advertising as an additional revenue source.

Technology - To assist Greenlink staff in achieving more reliable data reporting capability from the GFI fare data system, additional staff training and hardware upgrades are recommended. Greenlink is deploying the following Intelligent Transportation System (ITS) transit related components:

- Automated vehicle location (AVL) system;
- Dedicated frequency and radio dispatch system for new and existing buses; and
- Surveillance cameras for each bus.

Consideration should also be given to installing surveillance cameras and customer information displays in the Transit Center.

Customer Information - The public time tables should be reviewed for accuracy of content and graphic redesign. All requests for service should be recorded into a log

format and periodically reviewed for demand categorization and to prioritize implementation as resources become available.

Transportation Demand Management (TDM) Program - Key entities including local, state, and private organizations such as major employers should explore the applicability of establishing a TDM program for the Greenville region.

Governance - Consider formation of a transportation authority to advance funding initiatives.

Short/Mid-Term Improvements

The recommendations for short to mid-term transit system improvements, route network restructuring, and new transit services were developed for a three to five year implementation period. A major restructuring of the existing fixed route system is necessary to ensure meaningful service expansion and improvements are implemented. The recommended system includes the following services:

Fixed Routes - Service operating along a prescribed route according to a fixed schedule (Greenlink currently operates eleven fixed routes). The Short/Mid-Term Plan consists of nine fixed routes.

Circulator Routes - Complement the fixed route network, offering services that enter into areas such as neighborhoods, shopping malls, and office parks; provide local trip making; and operate on secondary roadways. The Short/Mid-Term Plan entails one circulator route.

Flex Routes - Involve a transit vehicle(s) operating along a fixed route, making scheduled stops along the way. Vehicles are allowed to deviate from the route to pick up and drop off passengers within a three-quarter mile buffer upon request. The vehicle then returns to the fixed route at the point at which it departed to accommodate the request. The Short/Mid-Term Plan entails two flex routes.

On Call Service - Demand responsive service that provides connections to major shopping, medical, or transportation hubs within a specific zone. Because the service is flexible in nature, the on call vehicles can operate within a variety of land uses and demographic areas. The Plan envisions three on call service routes.

Downtown Trolley - Typically operate in downtown areas, are linear in nature, and provide frequent service. One trolley route is recommended for downtown Greenville.



Express Service - These routes usually travel between the downtown sections of cities or major activity centers and the more residential suburbs or outer boroughs. The Plan includes four express bus routes.

Bus Rapid Transit (BRT) - BRT using buses to provide faster, more efficient service than an ordinary bus line which is achieved by making improvements to existing infrastructure, vehicles, and scheduling. The Short/Mid-Term Plan includes the initial segment of the BRT system between downtown Greenville and CU-ICAR campus.

Long-Term Service Improvements

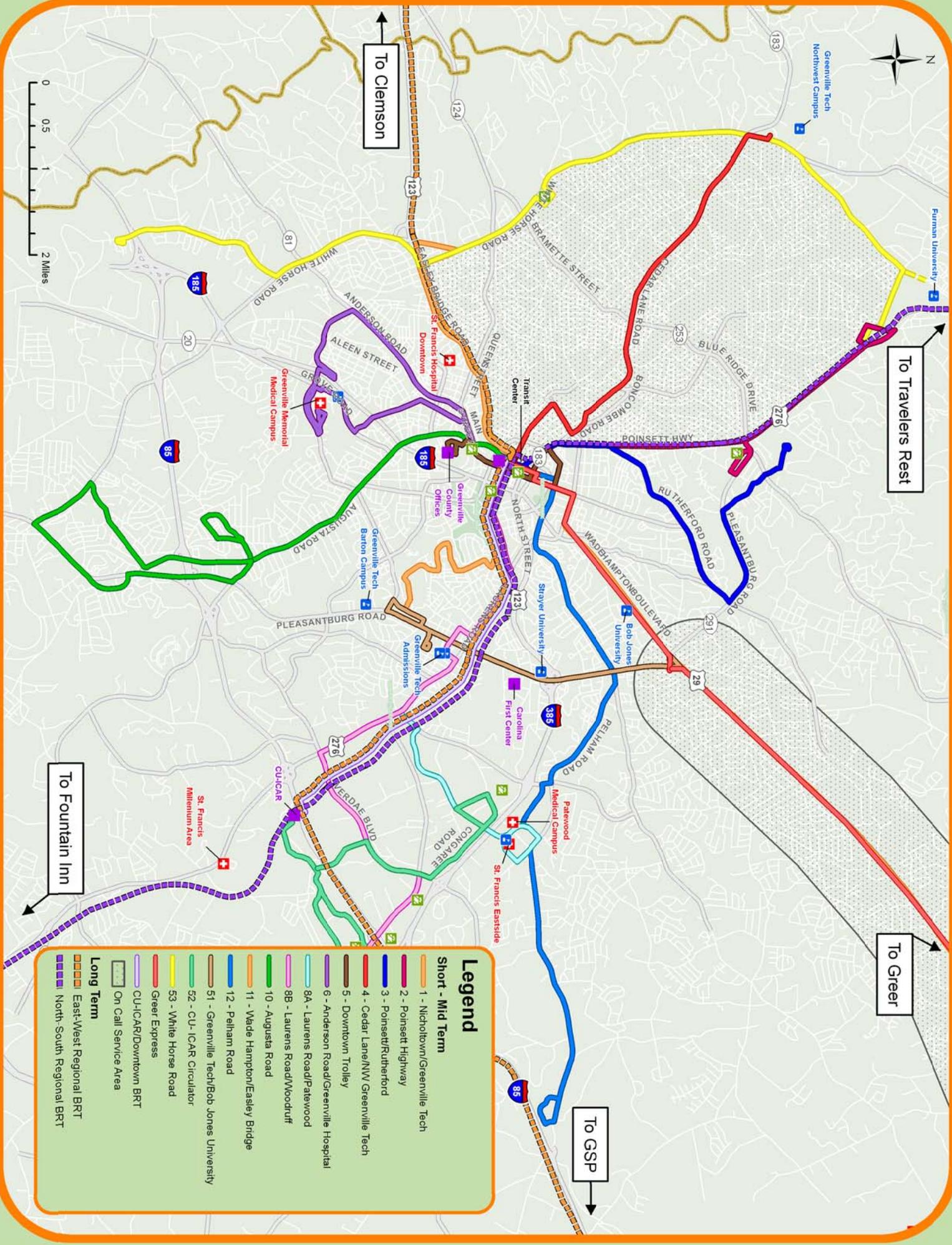
Long-term, expanded BRT and feeder services are recommended.

The restructured system is shown in the figure on the following page.

The table below summarizes the estimated service demands and operating and capital costs to implement the plan recommendations. A 1/2 cent county-wide sales tax, approved by referendum, will generate adequate local funds to support public transit while also providing increased investment in

Category	Current	Year 3	Year 4	Year 6	Year 10
Peak # of Vehicles	11	25	34	42	61
Routes/ Services	11	15	18	22	24
Operating Cost Est.	\$3.5	\$8.9	\$12.3	\$13.0	\$20.3
Capital Cost Est.	< \$1	\$29.2	\$20.7	\$17.5	\$25.1

sidewalks, bicycle/walking trails and intersection improvements that support enhanced mobility, transit-oriented economic development and quality of life. A public opinion survey of Greenville County registered voters conducted for this study indicates significant support for this funding method.



Legend

Short - Mid Term

- 1 - Nighthollow/Greenville Tech
- 2 - Poinsett Highway
- 3 - Poinsett/Rutherford
- 4 - Cedar Lane/NW Greenville Tech
- 5 - Downtown Trolley
- 6 - Anderson Road/Greenville Hospital
- 8A - Laurens Road/Patewood
- 8B - Laurens Road/Woodruff
- 10 - Augusta Road
- 11 - Wade Hampton/Easley Bridge
- 12 - Pelham Road
- 51 - Greenville Tech/Bob Jones University
- 52 - CU- ICAR Circulator
- 53 - White Horse Road
- Greer Express
- CU-ICAR/Downtown BRT
- On Call Service Area

Long Term

- East-West Regional BRT
- North-South Regional BRT

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1.0 Introduction

Transit services have been operated in Greenville for over 100 years. Since 1974, the system has been operated under the Greenville Transit Authority (GTA) which was created by Ordinances of the City of Greenville and Greenville County, pursuant to the South Carolina Regional Transportation Authority Law enacted in 1973. GTA has faced increasing challenges balancing its operating budget. The City of Greenville and Greenville County have increased funding of GTA to meet increasing operational costs, but service and ridership have declined. In late March 2008, the City of Greenville began operating the system under contract with GTA, and the system's brand was subsequently changed to Greenlink. The goals of the City's involvement were to stabilize GTA operations, make incremental transit improvements, and provide for long-term transit planning. In early 2009, Greenlink initiated a strategic planning process to establish the future direction for the system. The resulting **Greenlink Transit Vision and Master Plan** was developed to:



- Establish a long-term transit vision for the community;
- Examine and assess Greenlink to develop specific operational recommendations for near-term, short-term, mid-term, and long-term implementation; and
- Assist the GTA and its partners to establish transit policies and funding needed to develop a sustainable transit system that meets current needs and which can support future economic and community development.

This report serves as the final documentation for the *Greenlink Transit Vision and Master Plan* study and was completed in May 2010. The study was managed by the City of Greenville on behalf of GTA and conducted by URS Corporation. The study represents a joint regional effort among various jurisdictions, agencies, and educational institutions. The City of Greenville, Greenville County, South Carolina Department of Transportation (SCDOT), and Federal Transit Administration (FTA) assisted in underwriting and sponsoring the study. Additional local sponsors included Bob Jones University, Clemson University, Greenville Technical College, and Furman University.

Community participation was an integral component of the *Greenlink Transit Vision and Master Plan*. The GTA Board and study Steering and Technical Committees provided guidance, direction, and support for the study. The study team met with the GTA board in October 2009, January, and May 2010. Committee meetings were conducted in October 2009, February, and May 2010. Committee and board input were supplemented with one-on-one stakeholder interviews. The community-at-large was also engaged in the study through surveys and public information, City Council, County Council, and Greenville-Pickens Area Transportation Study (GPATS) meetings. A Greenlink rider survey was undertaken in December 2009. A web-based survey for the general public was hosted on Greenlink's website from December 2009 to

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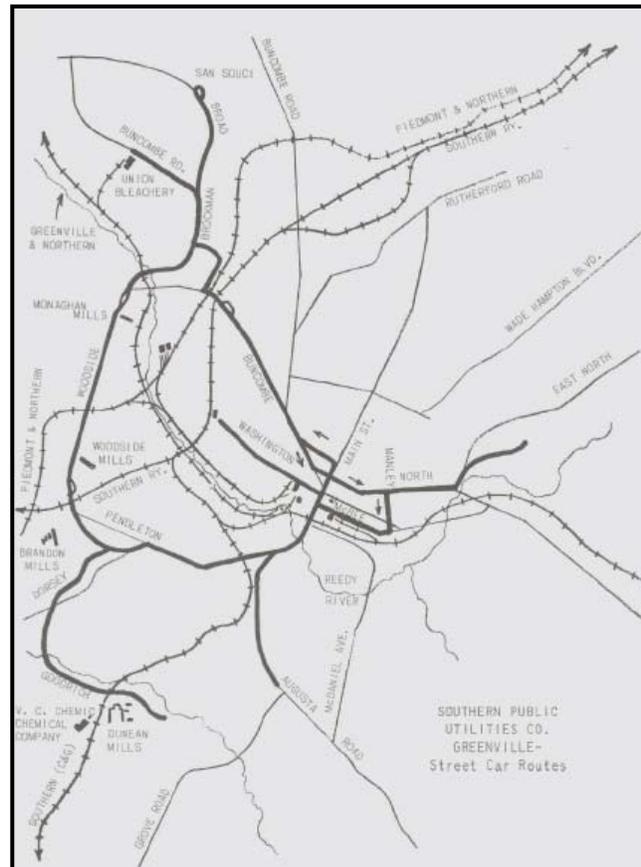
February 2010. A public information meeting was conducted at the Carolina First Center during the evening of March 18, 2010 that included a formal presentation about the study and provided the opportunity for attendees to ask questions and provide comments about Greenlink and public transit needs.

1.1 Service History and Profile

1.1.1 History

In February 1869, Greenville's Town Charter was amended by the South Carolina General Assembly establishing Greenville as a City. In the following years, the textile industry expanded from New England and Greenville became a significant center in the southern textile industry known as *The Textile Center of the South*. Over twelve mills were constructed in the Greenville area and the larger facilities also included adjacent mill communities that contributed to robust population growth.

As Greenville's urban population grew, public transit first appeared as street railways in the late 1800's. By 1910, Greenville had over 14 miles of streetcar lines. Encouraged by the Greenville City Council, Duke Power replaced the streetcars with more flexible electric trolleybuses in the late 1930's. As was common throughout the United States, transit ridership in Greenville peaked during World War II and immediately thereafter when commerce was focused on downtown, residential neighborhoods were compact and cohesive, the Interstate Highway system was in its infancy, and few owned private vehicles.



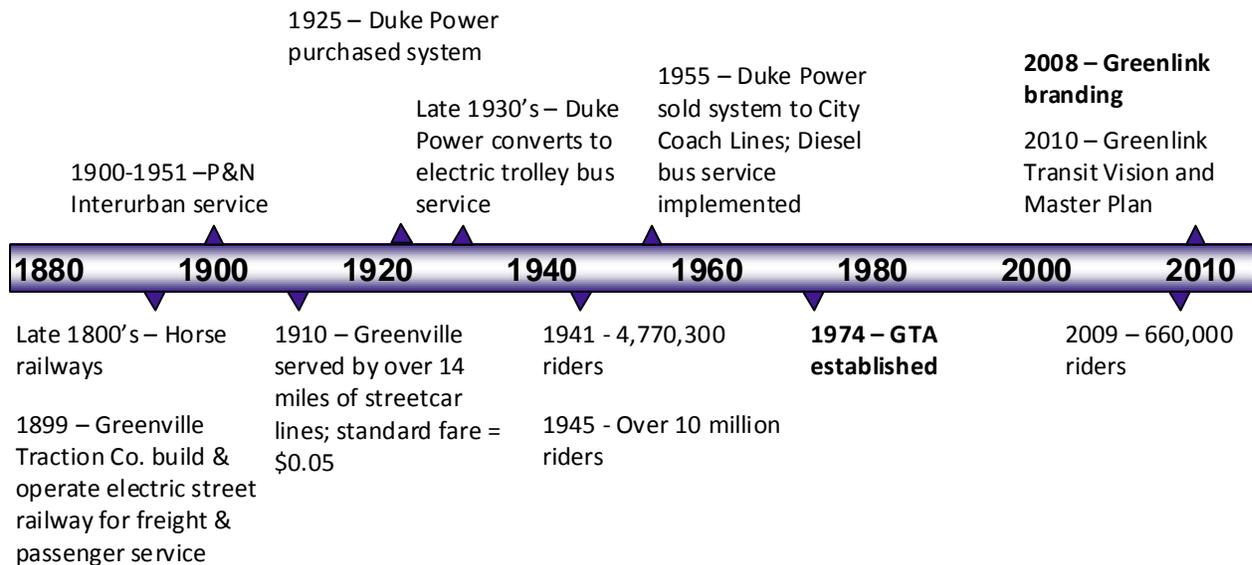
Greenville Streetcar Lines, 1930's

Interurban service connecting the City of Greenville with Anderson, Greenwood, Greer, and Spartanburg was developed during the 1920's by Duke Power through the Piedmont and Northern (P&N) Railroad. Passenger service was discontinued in 1951. The electric trolleybuses were replaced by diesel buses in 1955 due to Duke Power's sale of the transit operation to City Coach Lines who operated the system until 1975. City Coach Lines, which had as many as 30 buses in peak service, terminated their operation in 1975 due to a continuing decline in ridership, revenue, and service provided.

The GTA was created in 1974 and began operations of a limited system in 1975. One of GTA's ongoing challenges is that, during the formation of GTA, no dedicated revenue source was identified. As a result, GTA must compete annually with other City and County services for

operational and capital funding. This year-at-a-time budgeting has stymied GTA in planning long-term for investment in new services.

In 1996, a financial crisis occurred that caused service to be discontinued for several months. The City of Greenville and Greenville County recognized the need for service to be reinstated and agreed to assist with funding to allow GTA to resume service. In 2007, GTA faced another financial crisis. In late March 2008, the City of Greenville began operating the system under contract with GTA, branded as Greenlink, in order to stabilize GTA operations, make incremental transit improvements, and provide long-term transit planning for the transit system. The following timeline displays major milestones in Greenville’s transit history.



1.1.2 Service Profile

Greenlink currently provides service through 11 local fixed routes that operate Monday through Saturday from approximately 6:00 am to 6:00 pm on an hourly frequency. All routes terminate simultaneously on the half hour at the downtown Transit Center. As required by the Americans with Disabilities Act (ADA), complementary paratransit service is provided by Greenville Area Paratransit (GAP). GAP is operated by Greenlink and is provided for persons with disabilities who are unable to use the fixed route service and certified as eligible to use the paratransit service. GAP provides comparable service to the fixed route service in terms of shared ride, curb-to-curb pickup, service area, and days and hours of service. Transit service operates both within the City of Greenville and unincorporated Greenville County (see Figure 1). GTA serves as the Designated Recipient (DR) of federal and state transit funds for Greenville County. The DR is the local entity that is authorized to apply for and receive federal funds under various FTA programs, including the Urbanized Area Formula Program (Section 5307). A comparison of system operating statistics indicates performance has generally improved from 2008 to 2009 with the exception of ridership, as shown in Table 1.

Table 1: System Operating Statistics (2008-2009)

Measure	2008	2009
Fixed Route Passengers	711,295	654,992
Fixed Route Trips on Time	71%	86%
Demand Response Passengers	9,248	6,454
Demand Response Trips on Time	97%	100%
Collision Accidents	14	8
Road Calls	656	333

The Greenlink transit system operations were assessed using two evaluation approaches, comparing the overall Greenlink system to other similar systems and evaluating each fixed-route individually to identify strengths and weaknesses within the system. In order to review Greenville's transit service in relation to other similar areas, six southeastern cities' transit systems were identified, based on service area population. Data from the 2008 National Transit Database (NTD) were gathered for each system and summarized. The evaluation considered the following parameters: number of trips, vehicle revenue miles, vehicle revenue hours, operating budget, and system size as well as the performance measure cost per hour. Table 2 shows the results of the peer comparison. In relation to other peer transit systems, the Greenlink system has the smallest operating budget and service fleet of the systems, resulting in the lowest annual ridership as compared to the peer areas.

Table 2: Peer Area Performance Comparison

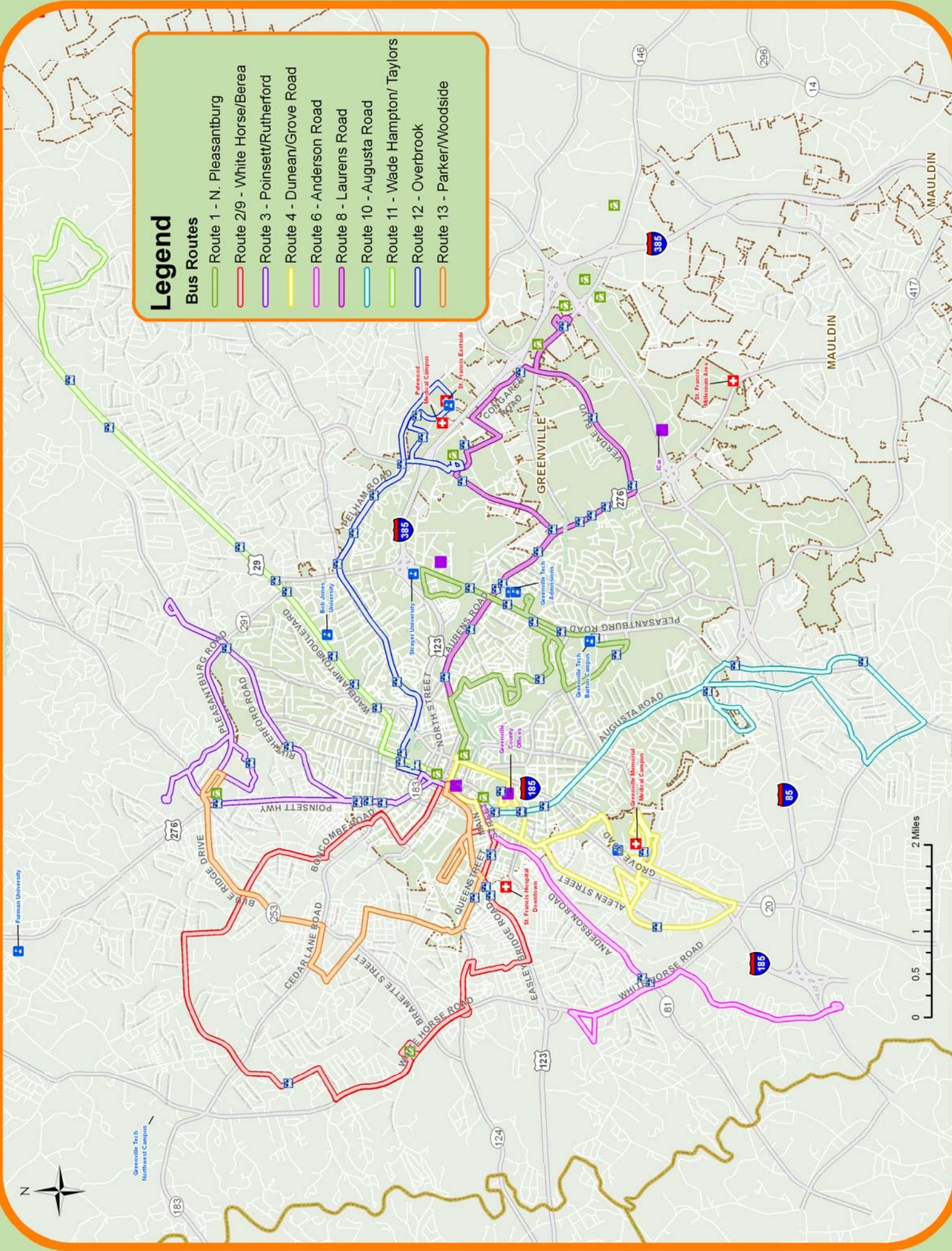
	Greenville, SC	Augusta, GA	Montgomery, AL	Columbia, SC	Greensboro, NC	Lexington, KY
Service Area Population	248,200	210,000	201,600	250,000	235,300	210,600
Passenger Trips (1,000's)	754	930	1,331	2,269	3,933	6,090
Revenue Miles (1,000's)	646	680	1,642	2,163	3,560	3,109
Cost per Revenue Hour	\$77.22	\$76.81	\$58.33	\$72.21	\$82.24	\$85.09
Operating Budget (Millions \$)	\$3.5	\$3.8	\$6.9	\$10.4	\$18.3	\$17.8
Peak # of Buses	11	13	25	33	42	45

Source: 2008 National Transit Database

Legend

Bus Routes

- Route 1 - N. Pleasantburg
- Route 2/9 - White Horse/Berea
- Route 3 - Poinsett/Rutherford
- Route 4 - Dunearn/Grove Road
- Route 6 - Anderson Road
- Route 8 - Laurens Road
- Route 10 - Augusta Road
- Route 11 - Wade Hampton/Taylor
- Route 12 - Overbrook
- Route 13 - Parker/Woodside



To assess the existing 11 routes, route profiles were developed from data supplied by Greenlink for 2008 through 2009. These profiles help to identify how well each route is performing on an average daily and monthly basis. Monthly productivity statistics were compared across the system for each route for weekday and Saturday service: passengers per revenue hour, passengers per revenue mile, cost per passenger, and cost per revenue mile. Two of the 11 routes do not operate on Saturday, Route 9 – White Horse via Washington, and Route 13-Parker-Woodside. The existing Greenlink Routes are as follows:

Route 1 – North Pleasantburg	Route 9 – White Horse via Washington
Route 2 – White Horse via Pendleton	Route 10 – Augusta Road
Route 3 – Poinsett-Rutherford	Route 11 – Wade Hampton-Taylors
Route 4 – Dunean Grove Road	Route 12 – Overbrook
Route 6 – Anderson Road	Route 13 – Parker-Woodside
Route 8 – Haywood Mall via Laurens Road	

The route review shows that the weekday routes carried from 9.6 to 27.3 passengers per hour, with an average of 18.5 passengers per hour. Systemwide, the route with the greatest number of passengers was Route 10-Augusta Road (27.3 passengers). Route 13-Parker Woodside had the fewest number of passengers per hour (9.6 passengers). The weekday service productivity was greatest on Route 10-Augusta Road, transporting 1.7 passengers per mile. Route 13-Parker-Woodside carried the fewest passengers per mile (0.7). There was a wider range of costs per passenger than cost per mile, from \$3.10 to \$8.79 for weekday service. Route 11-Wade Hampton-Taylors had the lowest cost per mile. Route 1-North Pleasantburg and Route 4-Dunean Grove Road had the greatest cost per mile. The Greenlink operational review and productivity profiles are included in Appendix A.

1.2 Purpose

The purpose of the *Greenlink Transit Vision and Master Plan* is to assist GTA and its stakeholders and partners identify and establish the necessary policies and funding to sustain a viable transit system to meet the community's current and future economic and community development needs. This report summarizes the plan development process and provides guidance in a number of key categories for proceeding to expand, improve, and sustain transit services within the Greenville area. Through review of numerous prior and ongoing plans and studies, and input obtained from a wide variety of sources, it was noted that the community is generally supportive of improving mobility options through proceeding to develop a viable transit system. In order to achieve and sustain any transit related expansion and improvements, a dedicated funding source must be identified and accepted by the affected agencies and citizens. Implementation of the plan's recommendations is dependent on the community taking active steps to move forward.

A glimpse at the history of transit in Greenville, especially over the past 50 years, reveals a continual downward spiral caused by static funding, combined with operating cost increases, which has resulted in service reductions and a corresponding loss of ridership. The inherent characteristics of transit centered on social, economic, and lifestyle benefits must be fully recognized and accepted by the greater Greenville area. Greenville has prospered over the years through many positive initiatives and accomplishments driven by a "Can Do" attitude, and transit is an issue that requires specific focus at this time.



Greenlink now has an opportunity to take advantage of some significant developments that can assist in promoting transportation alternatives in the greater Greenville area. The recent announcement that Proterra will soon be manufacturing new advanced technology buses in Greenville has generated a new interest not only in additional employment opportunities, but also the potential for showcasing these buses in Greenville. The Clemson University's International Center for Automotive Research

(CU-ICAR), recognized as a major center for automotive research, continues to attract new employment and growth as well as advanced vehicle technology. The Greenville region continues to be at risk of being classified as "nonattainment" to meet federal air quality standards. Nonattainment status in the Upstate Region could jeopardize economic development potential. As transit utilization increases, this can mitigate the number of single occupant vehicle trips that are the primary mobile source of the criteria pollutants.

It is recognized that GTA is fully utilizing the available resources, though the resulting service is minimal, at best. If the community's leadership determines that additional local resources cannot be provided, it is likely that GTA's service will be further reduced or eliminated within the next two to three years. Even the current minimal service levels are at risk for reductions and possibly total elimination because there is not a dedicated funding source. The Authority is totally dependent on the local funding match being allocated on a year-to-year basis through the city and county general funds.

1.3 Study Tasks and Report Organization

The study process for the *Greenlink Transit Vision and Master Plan* was divided into two phases. The first phase focused on establishing the system baseline, collecting and reviewing existing plans and studies, initiating development of the transit vision, and developing near-term service recommendations. Phase two built upon work conducted in phase one and resulted in refining the transit vision and system goals, developing short-, mid- and long-term recommendations to fulfill the transit vision, and developing an implementation framework, including a funding plan to support implementation.

The Final Report presents the study information by the following topics:

- Section 2.0: Travel and Development Patterns*
- Section 3.0: Transit Best Practices*
- Section 4.0: Community Views and Transit Vision*
- Section 5.0: Near-Term Service Improvements*
- Section 6.0: Short and Mid-Term Improvement Plan*
- Section 7.0: Long-Term Master Plan*
- Section 8.0: Action Plan and Summary*

Detailed technical data and documentation supporting various study elements are included in the Appendices.

2.0 Travel and Development Patterns

The technical assessment sought to develop a thorough understanding of the existing transit service and community characteristics, particularly travel, land use, and development patterns. How and where people travel indicates where transit should operate. An understanding of the type, mix, and intensity of land use and development patterns now and into the future is essential in considering what types of transit modes and operational approaches are most feasible.

2.1 Regional Travel Patterns

GPATS is the Metropolitan Planning Organization (MPO) for the Greenville Region. GPATS maintains a travel demand model that utilizes various input data sets to project future area travel patterns and volumes. In order to determine general trip making patterns in the Greenville area, the GPATS travel demand model was utilized to determine the volume of daily trips between major points of area destinations. This analysis was conducted using estimated trips in the years 2012 and 2030 to concentrate on areas as Downtown Greenville, the Haywood Mall area, other major employment centers, and outlying communities such as Mauldin, Easley, and Travelers Rest. Trip pattern summary tables are included in Appendix B. The origin and destination patterns show the following characteristics:

- The Haywood Mall area (which for the purpose of this analysis includes Fluor's headquarters, St. Francis Eastside, and Patewood Medical Campus) generates more trips than the Downtown Greenville area, including about 8,000 daily trips which begin and end in the area.
- A particularly large number of trips occur between Mauldin and the Haywood Mall area.
- There are a large number of trips traveling between Mauldin and Simpsonville.
- By the year 2030, the Verdae/CU-ICAR area is predicted to generate more daily trips than Downtown Greenville, indicating substantial growth (from about 4,400 trips in 2012 to 21,000 trips in 2030).
- While Downtown Greenville will continue to generate a large number of trips, the GPATS model indicates that future growth will be limited.

The GPATS model generates the number of trips and travel patterns, but it does not provide a breakdown of the how trips are conducted, including driving alone, carpooling, taking transit, or walking. In the Greenville urbanized area, the latest U.S. Census American Community Survey for 2008 indicated a majority of Greenville commuters are driving alone to work (83 percent), followed by carpooling (10 percent), walking (2.3 percent) or some other means (1.8 percent). Only one-half percent of commuters indicated they take public transportation to work.

The *GTA Transit Development Plan 2006-2011* (TDP) provided an assessment of transit markets and transit-dependent populations, including minority, elderly, low-income, disabled, and youth populations. The TDP noted that low-income and minority populations are concentrated west and southwest of downtown Greenville. Elderly populations are concentrated east and southeast within Greenville. In addition, clusters of transit-dependent populations live in the White Horse Road and Berea areas.

2.2 Land Use and Development Assessment



A successful transit system is one that meets the needs of the community and is an integral part of the overall transportation system. One of the greatest factors influencing transit is land use and development characteristics. A thorough review of existing available data was conducted as it pertained to land use policy and growth patterns within the study area. The primary purpose of the land use and development assessment was to determine if existing and future land use and growth patterns can effectively be supported by long-term public transit

initiatives. Current adopted land use and comprehensive plans, development proposals, small area plans, and GIS data were reviewed.

2.2.1 Assessment Approach

For the adopted land use/comprehensive plan review, each was reviewed for the following transit supportive strategies:

- Recognition of future public transportation improvements;
- Encouragement of a mixture of residential, office, service-oriented retail and civic uses in certain corridors;
- Encouragement of a mixture of housing types, including workforce and affordable housing;
- Organization of appropriate land uses around identified corridors;
- Policy which allows for higher, transit supportive densities within the identified corridors;
- Identification of existing employment centers, activity centers/destinations, and higher density residential areas; and
- Identification of growth corridors for employment/higher density residential.

Each of the following adopted land use documents were reviewed and summarized in three categories: land use, growth, and transportation goals/objectives.

- Travelers Rest Comprehensive Plan (2006)
- Mauldin Comprehensive Plan (2009)
- Simpsonville Comprehensive Plan 2030 (2009)
- Fountain Inn Master Plan (2006)
- City of Greer Comprehensive Plan Draft (2010)
- City of Greenville Downtown Master Plan (2008)
- Plan-It Greenville (2009)
- Greenville County Comprehensive Plan (2009)

The following proposed major developments and commercial corridor studies within the project limits were reviewed to better understand their relationship to the primary transit corridors and the mix of land uses, densities, and connectivity improvements identified.

- Verdae
- Millennium
- Linky Stone Transit Oriented Economic Development
- Kroc Center Plan
- Haynie/Sirrine Neighborhood Plan
- Commercial Corridor Studies (Augusta Road, Church Street, Haywood Road, Laurens Road, Pleasantburg Drive, Pete Hollis Gateway, and West Washington)

With regard to available GIS data, and with the assistance of the City of Greenville and Greenville County Planning Departments, several data maps were assembled to gain a better understanding of where future growth and potential transit supportive development opportunities may exist.

- Vacant and underutilized land within each of the primary transit corridors in the study area were identified to better understand where larger redevelopment or infill opportunities occur. For the purposes of this exercise, underutilized parcels are defined as parcels where the ratio of existing buildings and other improvements plus the value of the land to the total appraised land value is less than 40 percent.
- Growth projections between years 2009 and 2030 for employment and residential populations based on traffic analysis zones (TAZ) for the study limits. A TAZ is a geographic unit defined within the travel demand model for the purposes of evaluation.
- Residential neighborhood boundaries in proximity to the major transportation corridors. This highlights where higher densities or larger employment centers or activity centers may be problematic due to close proximity to established single-family residential development.

At the multi-jurisdiction level, the new federal initiative from U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (USDOT), and the Environmental Protection Agency (EPA) for Sustainable Communities, which aligns goals for transportation, sustainable infrastructure and land use, and smart growth, was reviewed. Input from the Steering and Technical Committees was gathered by conducting a one day visioning session in Greenville. The visioning session was organized to gain a better understanding of land use and transit relationships, and to define where transit supportive densities would most likely be embraced in the study area. Participants were divided into groups by geographic areas and to discuss the role of transit in Greenville by four topic areas: mobility, development, accessibility and focusing growth, as shown in Table 3.

Table 3: Potential Roles of Transit in Greenville

Role of Transit in Greenville	Opportunities	Challenges
Mobility – Identify corridors with greater propensity for transit and focus investment where transit has best chance for higher productivity.	Higher Ridership, Faster System Development	Geographic Equity
Development Catalyst – Intense investment in certain areas to encourage growth which in turn feeds transit system.	Highest Ridership, Slower System Development	Developer Support
Accessibility – Wider area of transit investment concentrating on providing access to critical destinations to as many people as possible.	Equity	Network Efficiency, Unfocused
Focusing Growth – Assumes that growth is going to happen, strategic transit investments in concert with land use and zoning incentives or controls.	Land Use/ Transit Coordination	Tough Politically

2.2.2 Land Use and Development Profiles

The assessment of the land use data gathered and reviewed has been organized for each of the primary transit corridors identified in this document.

- North Corridor (US 276)
- Northeast Corridor (Wade Hampton Boulevard)
- Southeast Corridor (Laurens Road/Main Street)
- Southwest Corridor (South Church/US 29)
- West Corridor (US 123)

The corridor profiles provide a logical framework to discuss observations, opportunities, and issues that may arise in planning for transit supportive land uses and urban design patterns by geographic area. For each corridor, a profile has been developed which summarizes the existing land use and context, comprehensive plan documentation, socioeconomic and demographic trends, and opportunities and challenges for supporting transit-oriented economic development.

North Corridor/US 276 Profile

Description: Downtown Greenville to Travelers Rest along US 276/Poinsett Highway

Existing Land Use Features:

- Predominately low density highway-oriented development.
- Established neighborhoods near Greenville.
- Warehousing and light industry along the Norfolk Southern (NS) Railroad.
- From NS Railroad and SC 291/Pleasantburg Drive, dispersed land patterns
- Big-box retail center Cherrydale Point at US 276 and SC 291.
- Pastoral and scenic landscaped views at Paris Mountain State Park and Furman University
- Low density residential in Travelers Rest.
- Travelers Rest High School and North Greenville Hospital along North Main Street.

Comprehensive Plans Review

- Within the City of Greenville, parcels fronting US 276 are designated *Mixed-Use Community*, which anticipates a mixture of land uses and an intensification of residential development.
- Greenville County identifies Cherrydale Point as a *Regional Center* on its future land use map. Cherrydale Point is surrounded, on the future land use map, by *Residential Land Use 3*, representing three to six residential units per acre, gross density.
- Between Cherrydale Point and Travelers Rest, the County's Comprehensive Plan indicates *Residential Land Use 2* surrounding a *Sub-Regional Center* near Furman.
- The Travelers Rest Comprehensive Plan designates much of the North Corridor for commercial use with no guidance on the inclusion of residences, however, *Medium- to High-Density Residential* land use abuts these commercial districts. No guidance is offered regarding appropriate densities in these areas. Most residential land in Travelers Rest is low-density.

Socioeconomic Data and Projections

- Existing population densities in the lower half of the corridor range from 800 to 3,000 persons per square mile. The Furman University and central Travelers Rest are moderate in population density, 800 to 1,700 persons per square mile. The eastern side of US 276 near Paris Mountain is low density. Future significant growth is anticipated in portions of Travelers Rest, ranging from 401 to 1,200 persons per square mile. Growth is also projected around Paris Mountain.
- Cherrydale Point shopping center anchors the only concentration of employment in the corridor, as measured in employees per square mile. The commercial area is projected to attract additional employees between 2009 and 2030, as are portions of Travelers Rest and the area around Furman.

Opportunities/Challenges for Transit Supportive Development

Opportunities

- Stakeholders participating on behalf of the North Corridor identified several destinations that seem well positioned to attract transit-

Challenges

- In several portions of the corridor, in particular along US 276 between Buncombe and the rail corridor, shallow commercial parcel depths

North Corridor/US 276 Profile

supportive development. The possibility of linking to CU-ICAR, in the Southeast Corridor, also appealed to these stakeholders. They view fixed-guideway transit as an opportunity to spur economic growth along the North Corridor.

- Potential to serve several large employment centers and activity centers along corridor, including downtown Travelers Rest, Furman University, Cherrydale Point, and the proposed high-speed rail station, which could be sited at the existing AMTRAK station at West Washington Street near US 276.
- The corridor is central and well connected to significant residential populations, although primarily single family densities.
- Along the corridor, there is relatively good block structure, pedestrian environment, and positive building orientations.
- There is a significant amount of vacant and underutilized parcels along US 276 near Travelers Rest that may provide opportunity for transit supportive uses.
- US 276 is well connected to the greenway plan for the Swamp Fox rail corridor.
- There is significant residential population growth projected around Travelers Rest, and its location as the terminus of the North Corridor positions the town's potential station as a park-and-ride destination for northern Greenville County.

adjacent to single family residential may hinder more intense transit supportive development.

- Corridor is dominated by primarily lower single family residential densities.
- Very little employment growth is projected in this corridor.

Northeast Corridor/Wade Hampton Boulevard Profile

Description: Downtown Greenville to Greer along US 29/Wade Hampton Boulevard

Existing Land Use Features:

- Transitioning suburban/urban land use between Bob Jones University and downtown Greenville.
- NS Railroad crosses Wade Hampton Boulevard in Taylors and includes industrial and warehousing as well as shopping area anchored by Wal-Mart.
- Dispersed residential and vacant land closer to Greer.
- Office, medical, and residential development near downtown Greer.
- Historic Downtown Greer (along Poinsett Street/SC 101/290) includes restaurants, shops, and offices around a new municipal complex and city park.

Comprehensive Plans Review

- Within the City of Greenville, Wade Hampton Boulevard is classified a *Mixed Use Community* on the future land use map. The City's Comprehensive Plan foresees redevelopment of this corridor into *Urban Residential* neighborhoods with net density between 16 and 20 units per acre. The corridor is flanked by *General Residential Neighborhoods* near the campus of Bob Jones University.
- The Greenville County Comprehensive Plan identifies a narrow band of land that aligns with the Northeast Corridor as *Residential Land Use 3* in its future land use map, with a gross residential density of three to six units per acre. The County's map also shows a *Sub-Regional Center* at the present location of large-format regional retail. The County Comprehensive Plan suggests the area could redevelop and intensify with a broader mix of uses that could support a transit station.
- The comprehensive plans of both Greenville County and the City of Greer identify Wade Hampton Boulevard as a *Transit-Oriented Corridor* on future land use maps.
- The Greer Comprehensive Plan has planned a Community Center on West Poinsett Street, near its intersection with Wade Hampton. The center is surrounded by a district classified *Residential Land Use 3*, which in Greer, represents a gross density of 4.6+ units per acre. The City's comprehensive plan identifies its downtown as *Greer Station*, which includes a mixture of non-residential uses.
- Neighborhoods between *Greer Station* and the West Poinsett Street Community Center include medium- to high-density residential development. At its western edge, the City of Greer plans low-density residential land use and *Neighborhood Retail*.

Socioeconomic Data and Projections

- Existing population densities within the Northeast Corridor are moderate, ranging from 800 to 3,000 persons per square mile. A few neighborhoods in the Cities of Greenville and Greer exhibit higher densities, over 3,000 persons per square mile. The densest area in the corridor is occupied by Bob Jones University, with over 6,500 persons per square mile due to on-campus student housing.
- Future population densities throughout the corridor are projected to remain stable or decline somewhat between 2009 and 2030, with the exception of fast-growing areas in and around Taylors, just west of Greer.
- The corridor's employment is roughly concentrated in five clusters, two of which are the termini – downtown Greenville and Greer Station, with more than 2,000 jobs per square mile. Greer Memorial Hospital and Bob Jones University anchor two additional clusters. The fifth occurs where the railroad crosses Wade Hampton Boulevard. Future employment projections do not indicate substantial employment growth.

Northeast Corridor/Wade Hampton Boulevard Profile

Opportunities/Challenges for Transit Supportive Development

<i>Opportunities</i>	<i>Challenges</i>
<ul style="list-style-type: none"> • There are numerous trip generators in eastern Greenville County, but several of them are not immediately adjacent to the corridor. Those in the corridor seen as opportunities to anchor transit-supportive densities include downtown Greer, Greer Memorial Hospital, and Bob Jones University. Other destinations noted elsewhere in eastern Greenville County include Greenville Tech’s Greer Campus and Greenville-Spartanburg International Airport. • Significant residential population growth is projected to the Northwest and Southwest of City of Greer. • Vacant and underutilized parcels along Wade Hampton Boulevard may provide opportunity for transit supportive uses. There appears to be future redevelopment opportunities at Rutherford Road to Main Street in the north, at Balfer/Rushmore Drive commercial centers, between Batesview and White Oak, and infill opportunities around the BiLo Center (as recommended in the Greenville Master Plan). • Wade Hampton Boulevard could be reoriented for multimodal transportation solutions due to lane width and right of way. 	<ul style="list-style-type: none"> • The corridor is currently developed with primarily auto-oriented uses the entire length. • In several parts of the corridor, shallow commercial parcel depths adjacent to single family residential may hinder more intense transit supportive development. • Low residential densities predominately occur along the corridor. • Corridor lacks good greenway connectivity and public open space.

Southeast Corridor

Description: Downtown Greenville to Mauldin, Simpsonville, and Fountain Inn along East Washington Street, Laurens Road/US 276, North Main Street, SR 417/South Main Street, SR 14

Existing Land Use Features

- Near downtown Greenville along East Washington Street includes Cleveland Park and is comprised of a variety of land uses, including retail, office, and various housing types.
- Along US 276/Laurens Road to Pleasantburg Road is a transitional area between the established urban core of Greenville and suburban regional commercial areas closer to I-85. A variety of commercial uses front Laurens Road, and single-family homes are located behind Laurens Road.
- The corridor becomes predominantly non-residential suburban corridor of large-format, single-story commercial buildings with outparcels toward the roadway. Low-density residential development in an irregular street network exists on the southwest side of the corridor, while a large tract of land is undergoing extensive mixed-use development on the northeast, near I-85 (Verdae). This segment is intersected by two arterials: Haywood Road and Woodruff Road. Haywood is the spine of an automobile-oriented super-regional commercial area.
- East of I-85, vacant tracts of land are under development for CU-ICAR.
- In Mauldin, the development is suburban, primarily single-family homes and freestanding commercial buildings. Large-format retail and the municipal complex stand at the intersection of Mauldin, US 276, and Butler Road.
- In Simpsonville, the Carolina Piedmont (CPN) Railroad veers close Main Street at the town's northwestern edge, supporting industry and warehousing. Main Street veers toward I-385, where a perpendicular road has an expressway interchange, which supports automobile-oriented commercial development, a public school, a hospital, and medical offices.
- Downtown Simpsonville includes a mixture of uses expected in a small southern town: commercial, residential, institutional, and office uses around the municipal seat of government. The surrounding neighborhoods offer good street connectivity.
- The corridor, following SR 14 southeast of Simpsonville, passes Hillcrest Hospital to enter an area of vacant tracts interspersed with industrial, institutional, and commercial uses. Residential land use between Simpsonville and Fountain Inn is low density and sporadic.
- The corridor terminates at the southeastern end of Fountain Inn's retail district at SR 418. Like Simpsonville, Fountain Inn includes a variety of land uses within an interconnected street network oriented around the center of the municipality. Because the CPN Railroad very closely parallels Main Street Fountain Inn, industrial and warehouse uses also appear near the town center.

Comprehensive Plans Review

- Much of the land within the Southeast Corridor lies within four municipalities: Greenville, Mauldin, Simpsonville, and Greer. The Greenville County Comprehensive Plan addresses the future use of only those lands between these municipalities.
- The corridor, for much of its length through the City of Greenville, is designated *Transit-Oriented Development* for future use of land. The City's Comprehensive Plan references a net residential density of 16 dwelling units per acre.
- Neighborhoods at East Washington Street and Laurens Road are designated *Mixed Use Neighborhood* and *General Residential*, with density ranges of one to 15 units per acre.
- The City of Greenville's plan identifies land surrounding Laurens Road's intersection with Haywood Road as *Mixed Use Community* and could accommodate homes at net densities between 16 and 20 units per acre.

Southeast Corridor

- The City of Mauldin's Comprehensive Plan expresses the desire to establish a *City Center* with a mixture of commercial, civic, and residential uses. The city center district is flanked by three tiers of residential districts: *Multifamily*, *Medium Density*, and *Low Density*. Transit-supportive densities are planned on the western flank of the city center, along Butler Road, which intersects the Southeast Corridor (US 276).
- Segments of the corridor north and south of the planned city center are designated *Employment*. This aligns with the CU-ICAR development near I-85, and fills a triangle of land bound by I-385, US 276, and SC 417. This second district foresees continued use and development of an existing industrial/distribution area that enjoys superior access to freight routes.
- The frontage of Main Street Simpsonville is classified with four districts that allow high, transit-supportive residential densities. The districts of *Village Activity Center*, *Regional Activity Center*, and *Town Center Mixed Use* – recommend maximum net densities of at least 19.9 dwelling units per acre in multi-story mixed-use buildings. The *High-Intensity Neighborhood* classification plans 12 units per acre, with density bonuses up to 16, in a more residential setting.
- Fountain Inn's Comprehensive Plan calls for continued growth of its higher density residential areas on the northern edge of town, where attached units currently exist. The plan discourages transit-supportive residential densities in its town center but does support a variety of non-residential uses.
- Greenville County has planned various medium- and high-density residential areas and employment areas. The County's comprehensive plan also identifies a point on SC 417 between Mauldin and Simpsonville as appropriate for a *Sub-Regional Center*. This designation encourages restaurants and retail uses and either a high-density suburban or urban residential component.

Socioeconomic Data and Projections

- Population densities vary significantly throughout the corridor and even within the municipalities along the corridor. The segment of Laurens Road between East Washington Street and Pleasantburg Drive exceeds 3,000 persons per square mile on the corridor's south side. The opposite side of Laurens Road is projected to attract more than 1,200 residents per square mile to 2030, adding to its 2009 population density of at least 1,700 persons per square mile.
- Proceeding southward along the corridor, population densities decline. New residents are expected, however, in neighborhoods surrounding CU-ICAR and the Verdae development. Population is concentrated in Mauldin on the east side of the corridor. Simpsonville and Fountain Inn are lower density communities with fewer than 1,700 persons per square mile in 2009.
- These three cities along the corridor's southern end are projected to attract influxes of new residents, particularly in north-central Fountain Inn; however Mauldin is projected to lose population by 2030. The projections indicate a dispersed population growth pattern in which very low-density areas in 2009 (less than 800 persons per square mile) will add large numbers of residents.
- The prevalence of infrastructure along and parallel to the corridor, including rail and expressway, supports some of the highest concentrations of employment in the region, with employment densities ranging from 2,001 and 10,000 jobs per square mile. At the corridor's termini, downtown Greenville has employment densities above 10,000 jobs per square mile, while Fountain Inn's employment is between 501 and 2,000 jobs per square mile.
- Employment within the Southeast Corridor is expected to increase significantly, as much as within any corridor in the region. Projections indicate an addition of at least 500 jobs per square mile between 2009 and 2030. Several thousand jobs are projected for the Verdae and CU-ICAR sites, along I-85 between US 276 (the Southeast Corridor) and I-385.

Southeast Corridor

Opportunities/Challenges for Transit Supportive Development

Opportunities	Challenges
<ul style="list-style-type: none"> • A significant number of destinations exist and others are under development. This assortment of retail and employment centers generates large volumes of trips, a portion of which could be served by transit in the future. • The Washington Street section, where buildings orient to street and traffic volumes are lower, supports transit oriented urban form. • Significant residential population and employment growth is projected along the corridor to Fountain Inn. • The area exhibits significant development momentum along the corridor at Verdae, Millennium, and CU-ICAR, as well as great potential at Pleasantburg Drive (Linky Stone development) along the Greenville County Economic Development Corporation (GCEDC) rail corridor that is consistent with transit oriented principles. • Redevelopment opportunities in existing suburban commercial areas with extensive surface parking such as the Shops at Greenridge near Haywood Road, and areas that could intensify with a broader mix of uses, notably medical hospital districts in Greenville and Simpsonville. • Large, vacant tracts of land south of I-85 have good potential for transit supportive uses. • Strong employment and activity centers exist at Greenville Tech and McAlister Square within the commercial corridor, with some opportunities to redevelop underutilized land. • A significant amount of vacant and underutilized parcels are found along Laurens Road. In conjunction with the major opportunities at Verdae and Millennium, there appears to be future redevelopment opportunities at Woodruff Road, Main Street at Butler Street and at White Drive in Mauldin, and between Main Street and Murry Street in downtown Mauldin. • The corridor is well connected to greenway and major employment and activity nodes (downtown, BiLo, and CU-ICAR). • The Laurens Road cross section has great multimodal transportation potential in conjunction with the abandoned GCEDC rail corridor. 	<ul style="list-style-type: none"> • The interconnectedness of these destinations, especially for non-motorized travelers, is challenged by the wide footprints of the region’s expressways. • The corridor is composed of primarily auto-oriented uses along Laurens Road, with a poor pedestrian environment resulting from high traffic speeds and volumes which compromise roadway crossings. • In several parts of the corridor, shallow commercial parcel depths adjacent to single family residential, in particular the south side of Laurens Road to Pleasantburg Drive, may hinder more intense transit supportive development. • There are several car dealerships along the northern portion of corridor that may constrain redevelopment in certain areas. • An additional challenge identified by stakeholders was to provide adequate parking that serves commuters as well as the downtown commercial offerings of Simpsonville and Fountain Inn.

Southwest Corridor

Description: Downtown Greenville to Greenville Memorial Hospital at I-185 along US 29 (South Church Street and Mills Avenue)

Existing Land Use Features:

- Attractive pedestrian environment along Main Street with wide sidewalks and mature trees.
- Urban greenway along the Reedy River.
- Neighborhoods adjoining the corridor and downtown are comprised of well formed blocks that offer good street connectivity in and around the core of the City.

Comprehensive Plans Review

- The comprehensive plan for the City of Greenville identifies segments of the corridor, from downtown to I-185, as *Mixed Use City Center*, *Mixed Use Community*, and *Mixed Use Neighborhood*. All three designations encourage a mixture of uses at a pedestrian scale and transit-supportive residential densities between 16 and 20 dwelling units per acre. *Urban Residential* and *General Residential* areas flank the corridor, descending in density as the corridor leads south. *Urban Residential*, at 16 to 20 units per acre, would support transit; *General Residential* would at the high end of its range: one to 15 dwelling units per acre.
- Greenville’s Downtown Master Plan identifies five areas for redevelopment and intensification, three of which are within the corridor: *County Square*, where the County Government Center is now; *Broad and River District*, where a need exists to reconnect a neighborhood segregated from downtown by the Church Street overpass; and *Gateway District*, at the foot of I-385 and the Bi-Lo Center. The other two plan-identified areas, *Heritage Green* and *Warehouse District*, are just four blocks from the Southwest Corridor, close enough to support and benefit transit service. The Downtown Master Plan further recommends buildings as tall as 12 stories on prospective transit corridors such as Church Street.

Socioeconomic Data and Projections

- Population densities along the corridor range from high (3,000 to 6,500 persons per square mile) at the edge of downtown to low (less than 800) where the corridor is occupied by medical facilities. Population is projected to remain stable or decline slightly.
- The corridor is anchored by two notable job centers, the County Government Center and aforementioned medical facilities and employment is projected to increase between 2009 and 2030.

Opportunities/Challenges for Transit Supportive Development

Opportunities

- There is the potential to serve several large employment centers and activity centers along this corridor: Two Hospitals, County Square, McBee Station, BiLo Center, Reedy River Park and Greenway.
- The corridor is well connected and central to significant residential populations, although primarily single family residential densities.
- The corridor has a relatively good block

Challenges

- In several portions of the corridor, shallow commercial parcel depths adjacent to single family residential may hinder more intense transit supportive development.
- There are primarily lower single family residential densities occurring along the corridor.
- Very little employment growth is anticipated in this corridor.

Southwest Corridor

structure, pedestrian environment, and positive building orientations.

- The corridor is well connected to the greenway plan.
- Some residential growth is projected south of I-85.

- Members of the Steering Committee and the Technical Committee identified the challenge of Main Street’s length to pedestrians as an opportunity to consider transit connections between its destinations and to reach out to nearby destinations and to connect them into the energy of downtown Greenville. Greenville Zoo, Greenville County Government Center, the hospitals, and the site of the proposed Kroc Center are short distances to downtown Greenville by motor vehicle.

West Corridor

Description: Downtown Greenville to Downtown of Easley, following US 123 and SC 93

Existing Land Use Features:

- In the City of Greenville, the area features a mixture of land uses, housing types, and regional destinations, including Greenville's minor league professional baseball stadium, Fluor Field, and St. Francis Hospital.
- Once the corridor bridges westward over US 25, it quickly transitions from a well connected series of neighborhoods to a sparsely developed landscape. The segment between Highways 25 and 153 has general commercial uses on large parcels and occasional residential subdivisions.
- The Easley Town Center development, which is midway between Greenville and Easley, is under development and will have a large concentration of retail jobs.
- Intensity of development gradually increases progressing west, across the SC 153 interchange and into Easley city limits. An automobile-oriented regional retail area precedes a fork in the road, at which point the corridor diverges from the linear commercial environment of US 123 and follows SC 93 into central Easley.
- Main Street Easley parallels the main line railroad through established neighborhoods of well-formed blocks. Connectivity across the corridor, however, is somewhat limited by the NS railroad.
- Downtown Easley begins with Easley High School and concludes with an automobile-oriented neighborhood shopping center. Between stand a variety of smaller footprint commercial venues and office buildings in addition to institutional uses.

Comprehensive Plans Review

- The West Corridor crosses the Reedy River as it departs downtown Greenville and enters neighborhoods designated *Urban Residential* by the City's comprehensive plan. Encouraging a variety of housing types at 16 to 20 units an acre and continuation of the well connected grid positions this area to support transit.
- The Greenville County comprehensive plan indicates a graduation of residential densities as the corridor heads west. Between city limits and US 25, the plan calls for *Residential Land Use 3*, the highest category, with a gross density range of three to six units per acre, a transit-supportive density.
- *Residential Land Use 2* begins on the west side of US 25, and *Residential Land Use 1* phases in closer to the Saluda River, the western boundary of Greenville County. The County plan also identifies a future *Sub-Regional Center* along this segment of the corridor.
- The city of Easley's zoning requires most residential development to occur as single-family houses on 6,000 to 10,000-square-foot lots. The exception is a *General Residential* area on the west side, within walking distance of the town center. The town center itself is zoned *Core Commercial*.
- By virtue of its location at the terminus of the West Corridor, Easley is well positioned to accommodate park-and-ride transit service. Commuters from Pickens, Liberty, Central, Clemson, and other communities in Pickens County currently endure long commutes into central Greenville.

Socioeconomic Data and Projections

- Population density in the West Corridor is moderate to high (1,700 to 6,500 persons per square mile) east of US 25 and into Greenville, moderate (800 to 3,000) in Easley, and very low in between (typically less than 800 persons per square mile). Population is likely to remain stable or decline

West Corridor

slightly in portions of the corridor that are largely developed in and around Greenville. The majority of established neighborhoods in Easley are projected to depopulate precipitously, while newly developing areas on the south side of the municipality recoup that population change. The segment of the corridor between Easley and the Saluda River is also projected to decline in population.

- St. Francis hospital anchors a concentration of employment at the western edge of the City of Greenville that exceeds 2,000 jobs per square mile. Greenville's "West End," just on the southwest side of downtown Greenville, is a burgeoning employment node, due in part to the economic infusion of professional baseball fans. Easley is also an existing employment node and will attract more employment by 2030, according to projections.

Opportunities/Challenges for Transit Supportive Development

<i>Opportunities</i>	<i>Challenges</i>
<ul style="list-style-type: none"> • There is the opportunity to serve several large employment centers and activity centers along this corridor: Hospitals, Fluor Field/West End, Kroc Center, Reedy River Park and Greenway. Moreover, some of these destinations have the potential to anchor redevelopment at transit-supportive densities. In particular, the stakeholders identified Buncombe Road, the County Government Center, and the vicinity of the Kroc Center near Reedy River. • The corridor is well connected and central to significant residential populations, although primarily single family residential densities. • Along the corridor, there is a relatively good block structure, pedestrian environment, and positive building orientations. • There are some significant vacant and underutilized parcels along US 123, particularly near Pendleton Road and County Road 230 that could be developed with transit supportive uses. • There are large, vacant tracts of land west of White Horse Road that could be developed with transit supportive uses. • The corridor is well connected to the greenway plan. • There is some significant residential population and employment growth projected around Easley. 	<ul style="list-style-type: none"> • In several parts of the corridor, shallow commercial parcel depths and adjacent single family residential may hinder more intense transit supportive development. • The corridor is comprised primarily of low density single family residential development; however there are pockets of multi-family housing. • A large gap of projected growth is anticipated between White Horse Road and Town of Easley.

2.3 Land Development Goals and Guiding Principles

To achieve the integrated transit and land use future envisioned for the *Transit Vision and Master Plan*, the following development goals have been identified. These goals build upon the adopted plans and policies.

2.3.1 Land Development Goals

Land Use - Provide for a range of housing, retail, employment, and recreation opportunities while strengthening existing neighborhoods; encourage the creation of dynamic, compact activity nodes which avoid/minimize sprawl; and provide a framework for the successful revitalization of underutilized properties along the primary transportation corridors.

Natural Environment - Enhance important ecological and recreational spaces through the expansion of the well established and expanding City/County parks and greenway system while encouraging land use and transportation activities that positively impact land, air, and water quality.

Community Design - Ensure that development and redevelopment is compatible with adjacent uses, while supporting the community's vision of vibrant, pedestrian and bicycle-friendly nodes surrounded by stable neighborhoods.

Transportation - Increase the viability of all modes of travel through creating better street connectivity, providing a safer and more comfortable walking/bicycling environment, and positioning future transit investments for successful ridership levels and supportive land uses.

2.3.2 Guiding Principles

The following guiding principles were considered in development of the Concept Land Use Plan. The principals emerged from the information and ideas gathered from adopted plan research, stakeholder/steering committee interviews, and the Visioning Work session.

Leverage Existing Assets and Emerging Economic Drivers - As the foundation of the plan area, existing employment clusters, activity centers, and significant residential populations should be strengthened and better served with reliable, fixed route transit. Public investments in the plan area must be able to leverage additional private investments to have a far-reaching impact.

Strengthen and Build Neighborhoods - Existing residential neighborhoods should be protected and stability maintained. Neighborhood edges should have appropriate transitions of land use intensity as they approach transit villages, major employment districts, and higher density developments. Adequate neighborhood services should be planned and housing types within neighborhoods should be balanced.

Balance Neighborhood, Community, and Regional Needs - The area serves an array of neighborhood, community, and regional needs that must be understood and balanced. Access, mobility, community design, and economic development goals must be carefully weighed to determine best solutions for transit villages and transit corridor development. Sustainable in-fill

and redevelopment opportunities should be explored to meet economic, environmental, and community needs and reduce sprawl.

Provide Choices - Transportation choices (such as transit, bicycling, and walking), as well as land use choice in appropriate areas should be enhanced by integrating a wider range of housing, shopping, employment, and recreational opportunities into the community.

Orient Development Toward Transit Corridors - The urban design for the multimodal transit corridors should encourage developments to have a positive orientation to the corridor, particularly at the major activity centers and at future transit stops. Block spacing and access control, streetscape design, building articulation, and scale should be designed to foster a pedestrian scaled experience.

Integrate Open Space Framework with Transit Corridors - Building upon the regional greenway master plans, pedestrian and bicycle linkages to the transit corridors and the major activity nodes, as well as outdoor recreational opportunities near or adjacent to the transit corridors, should be reinforced and prioritized.

2.3.3 Overall Development Concept

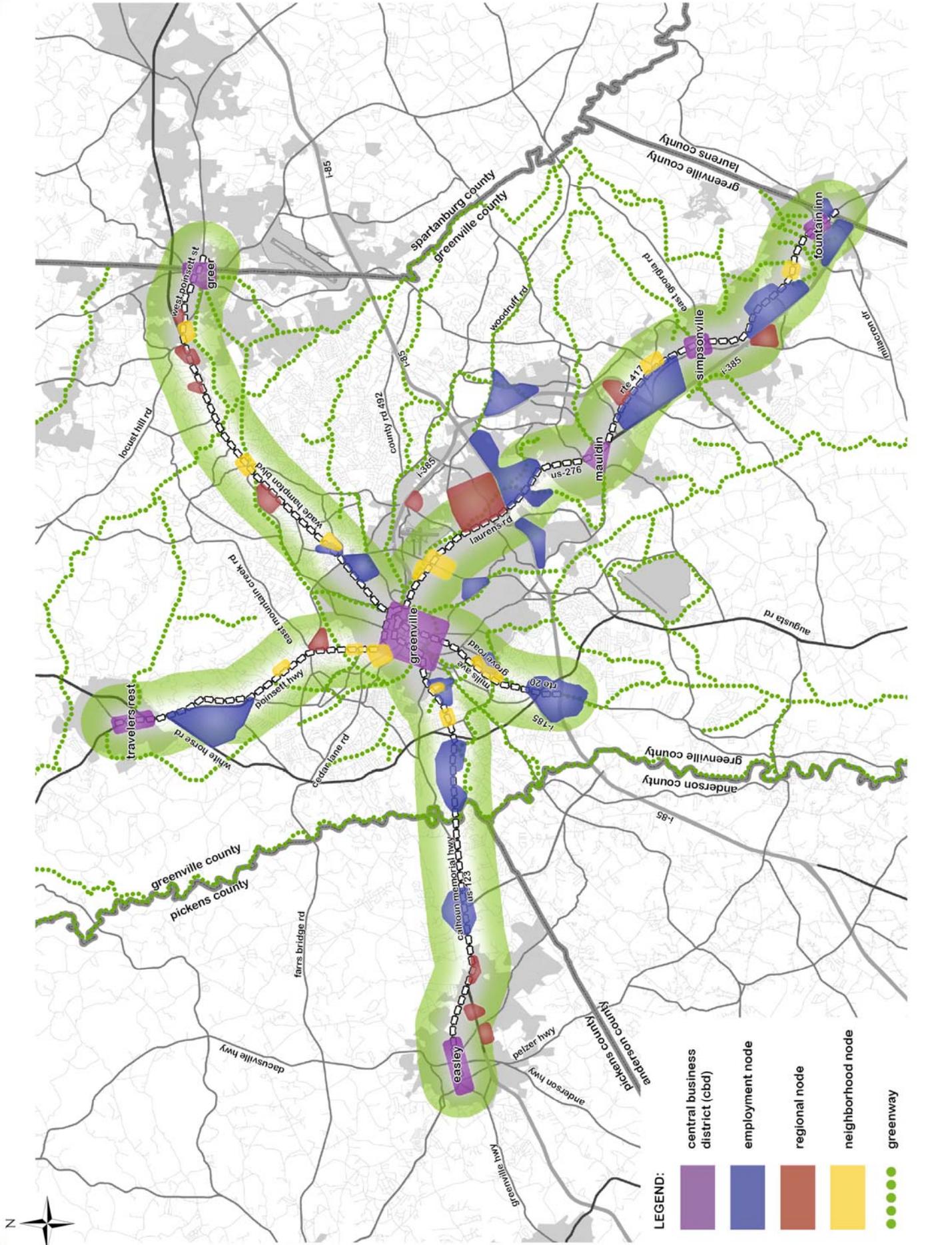
Considering the goals and guiding principles, the Concept Land Use Plan, shown in Figure 2 illustrates a framework for development patterns along the primary transit corridors in the Greenville Region. The plan depicts the general physical vision of the community as expressed in the community's various planning documents. It is intended to be general in nature and to guide the specific policies for the corridors.

The long-term concept for the primary transit corridors is to concentrate development intensity at nodes, which are the focus of neighborhoods linked together by street and greenway connections. Regional Nodes are located at the most highly connected location in the area, where the transit corridors are crossed by major regional access streets. This repositioned development pattern will help to revitalize areas by creating a more connected, walkable, and green community. Natural features and greenways are able to be used as amenities to spur additional high quality development. By re-orienting development, where possible, toward the transit corridors and toward new side street connections, a more walkable development pattern can be created and maintained over time, creating nodes of commercial activity with elements of higher-intensity, transit-supportive residential, office, and limited commercial areas. Strong linkages and effective land use transitions from adjoining residential neighborhoods to the transit corridor nodes should be carefully planned to help protect and enhance the existing neighborhoods.

There are four character areas that help to illustrate the plan concept. Identification of these character areas provides guidance to development of future land use policies.

Regional Node - Regional nodes are characterized by an intense mix of residential and commercial uses oriented around a transit station and/or regional road corridor. The regional node maintains its pedestrian scale with connected streets and walkable block sizes even when building footprints are larger.

CORRIDOR CONCEPT LAND USE PLAN



- LEGEND:**
- central business district (cbd)
 - employment node
 - regional node
 - neighborhood node
 - greenway

Central Business District (CBD) - Characterized by a diverse mix of commercial, employment, and civic uses, and housing types. Typically characterized by the highest intensity of uses for a particular town, though may have moderate densities indicative of historic 'main streets'. The CBD maintains a high quality pedestrian-scaled environment, well connected street network, and smaller block lengths. The CBD serves both the adjoining urban communities for neighborhood services and the region for commerce, culture, and employment.

Employment District - Characterized by larger industrial, office, or other larger format users such as hospitals, manufacturing facilities, warehouses, and flex space. These businesses need immediate access to rail and highways and are a major contributor to the job base of the community. Some supporting retail or small office may accompany the primary employment uses.

Neighborhood Node - Include mixed-use buildings or mixed-use blocks of apartments, townhomes, ground-floor retail, and office uses which primarily serve the surrounding area with a high level of internal and external connectivity.

Green Connections - Places where open space connections are preferred for environmental preservation and/or pedestrian and bicycle connection purposes. The greenways and overland pathways are well coordinated with city and county greenway initiatives and should reinforce connectivity between transit corridors and better link transit corridors to neighborhoods.

3.0 Transit Best Practices

All transit modes—including local bus, express bus, Bus Rapid Transit (BRT), paratransit, and community circulators—have potential roles in the future Greenlink system. This section provides an overview of how national “best practices” can help the Greenville Region derive the maximum benefits from transit system investments. Application of best practice principles vary depending on the unique characteristics and needs of a given area, however, the following categories are described as a general guide.

Transit System Best Practice Attributes

Reliability and Frequency of Transit Service

- Maximize spacing between bus stops
- Low floor buses
- Priority for transit vehicles in mixed traffic
- Vehicle locator systems for monitoring operations performance

Comfort, Safety, and Convenience of Service

- Travel time competitive with automobile
- Adequate vehicle capacity to avoid consistent overcrowding
- Expanded service periods throughout service days
- Amenities at stops and stations such as signage, seating, shelter, lighting, and information
- Well maintained and clean vehicles and facilities
- Knowledgeable and courteous operators and customer representatives
- Convenient fare sales locations
- Availability of sidewalks leading to stops and stations and secure waiting areas
- Available and understandable service information including printed and web based

External Factors

- Roadway designs that limit auto access in key activity areas
- Pedestrian and transit compatible land use policies
- Regional coordination and integration of transportation and land use plans and zoning
- Transit supportive rules and regulations on roadway and site development designs

Marketing and Community Involvement

- Research and knowledge of existing and potential transit markets
- Dedicated marketing program and resources
- Visibility and contact with various segments of the community

Specific areas that have been reviewed from a peer-systems or best practice perspective include governance and management, funding, service delivery, and service standards.

3.1.1 Governance/Management

The form of governance for transit systems vary (including turn-key management, “in-house” management, board structure and representation), and each form has advantages and

disadvantages. The existing governance structure for Greenlink includes a regional authority which contracts for service with the City of Greenville. GTA was created in 1974 by Ordinances of the City of Greenville and Greenville County, pursuant to the South Carolina Regional Transportation Authority Law, as originally adopted in 1973 and later amended. GTA is governed by a seven member Board. Two members are appointed by Greenville City Council, two members by Greenville County Council, and three members by the Greenville County Legislative Delegation. The GTA Board possesses all duties, powers and responsibilities as defined in the South Carolina Code of Laws including:

- Purchase, lease, own, or operate or provide for the operation of transportation facilities;
- Contract for public transportation services;
- Plan in concert with any appropriate local planning operation for public transportation services;
- Exercise the power of eminent domain limited to right-of-way and contiguous facility acquisition;
- Contract with other governmental agencies, private companies, and individuals;
- Sue and be sued, implead and be impleaded, complain, and defend in all courts;
- Adopt, use, and alter at will a corporate seal;
- Acquire, purchase, hold, lease as a lessee, and use any franchise or property, real, personal or mixed, tangible or intangible, or any interest therein, necessary or desirable for carrying out the purposes of the authority, and sell, lease as lessor, transfer, and dispose of any property or interest therein acquired by it;
- Fix, alter, change, and establish rates, fees, fares, and other charges for services or facilities of the authority;
- Establish public transportation routes and approve the alteration or addition of routes based primarily on a detailed analysis or proposed use and comprehensive cost analysis;
- Acquire and operate, or provide for the operation of, transportation systems, public or private, within the area, the acquisition of a system to be by negotiation and agreement between the authority and the operator of the system to be acquired;
- Make contracts of every name and nature and execute all instruments necessary or convenient for the carrying on of its business;
- Enter into management contracts with any person for the management of a public transportation system owned or controlled by the authority for a period of time, and under compensation and other terms and conditions, as may be considered advisable by the authority;
- Contract for the services of attorneys, engineers, consultants, and agents for any purpose of the authority;
- Borrow money and make and issue negotiable bonds, notes, or other evidences of indebtedness;
- Accept gifts, grants, or loans of money or other property from and enter into contracts, leases, or other transactions with and accept funds from federal, state, or local governments, public or semipublic agencies or private individuals or corporations and expend the funds and carry out cooperative undertakings and contracts;
- Do all acts necessary for the provision of public transportation services;
- Provide transportation services for residents of the service area to destinations outside the service area; and
- Promulgate regulations to carry out the provisions of this chapter.

During the majority of its existence, GTA has been characterized by inadequate local funding and declining service/ridership. The regional transit statute under which GTA was created did not include a viable funding mechanism. It now includes a mechanism for funding newly-created transit authorities but is silent on how to best fund existing authorities. For many years, GTA contracted with private transportation firms for management and operations. Due to financial uncertainty facing the system in 2007, GTA requested the City of Greenville to provide a proposal for transit operations services in order to maintain current service levels and avoid further service reductions. Through a subsequent execution of an Agreement on Transit Operations Services, GTA contracted with the City of Greenville in 2008 for a period of five years to provide transit operations services. Virtually all activities of GTA are provided by the City at cost. In late 2008, the City of Greenville and Greenville County executed an Intergovernmental Agreement to provide operating funds through their respective budgets, subject to annual appropriations. These committed funds are intended to cover the amount of operating subsidy which is not obtained through federal, state, and fare revenues.

Public transit agencies are typically governed through three different structures that include a regional transit authority, a city or county department, or a joint city/county agency. In order to determine the most effective governance structure for achieving Greenville's long-term transit vision, a review of current and potential transit governance practices was performed. Other similar transit organizations were reviewed for governance structure as shown in the Table 4.

Table 4: Comparison of Governance Structures for Peer Agencies

City	Organization	Governance
Columbia, SC	Central Midlands RTA	Eighteen member board created in 2002 and appointed by SC legislative delegation, county, and cities. Service operated through contract provider.
Charleston, SC	Charleston Area RTA	Seventeen member board created in 1997 and appointed by SC legislative delegation, county, and cities. Service operated contract provider.
Greensboro, NC	Greensboro Transit Authority	Nine member policy board created in 1991 and appointed by city council. Service operated through contract provider.
Lexington, KY	Transit Authority of the Lexington-Fayette Urban County Government	Eight member board created in 1972 and appointed by the joint City/County government. Paratransit service operated through contract provider.

Examples of direct city government controlled transit systems include Montgomery, Alabama and Augusta, Georgia. The Hall Area Transit (HAT) in Gainesville Georgia is operated through a Memorandum of Agreement (MOA) between the City of Gainesville and Hall County and is known as the Gainesville/Hall County Community Service Center (CSC). The CSC contains a number of social service functions in addition to HAT. Table 5 compares the current GTA governance with a new city or county department and a new transportation authority.

Table 5: GTA Organizational Options Comparison

	Existing GTA Governance Mechanism	New City or County Department	New Transportation Authority
Mission	Focus is entirely on transit	Numerous priorities in addition to transit	Transit and other transportation elements
Ownership	Indirect appointment process without direct accountability	City or County Council would provide system oversight	Ownership could be strengthened if elected officials representing partner agencies were members of Board.
Responsibility	No staff to assist GTA in oversight of contract with City causes discomfort for FTA	Select staff position(s) would be established	Select staff position(s) would be established
Funding	Difficult to secure	If City, limited sources; however, County can conduct referendum	Fares; other revenues (advertising, concessions, etc.); up to one percent sales tax, called by County Council and approved by referendum. Funds raised through sales tax could pay for other transportation facilities (roads, greenways, trails, etc.)
Designated Recipient (DR)	FTA is uncomfortable with current GTA / City contract for management and operations	City or County becomes DR, could manage/operate services or contract for service provision	Designated recipient of Federal and State transit funds
Geography	County	County	TBD

The most severe limitation to the current Greenville transit governance structure is the lack of dedicated funding which results in a corresponding lack of ability to have an independent GTA with executive and administrative staff. As contained in the GTA/City contract, all staff positions are currently city employees, and this appears to have raised a concern for the FTA. FTA most often interfaces with transit agencies through executive management and support staff who are direct employees of the transit agency. The agency is also the Designated Recipient of federal funds as opposed to having all coordination through the City of Greenville, who is not only the service contractor, but also furnishes all GTA related staff positions and direct coordination with FTA.

While the current GTA governance structure contains a number of attributes with its powers and responsibilities especially in its ability to expand regionally, the challenge of establishing dedicated funding through this structure remains a major impediment to sustaining and improving transit services. A reasonable approach to modifying the existing governance would be to consider establishing a new transportation authority through S.C. Code of Laws Title 4,

Chapter 37, and “Optional Methods for Financing Transportation Facilities”. This concept would provide new options in the areas of service area, representation, and funding.

3.1.2 Service Delivery

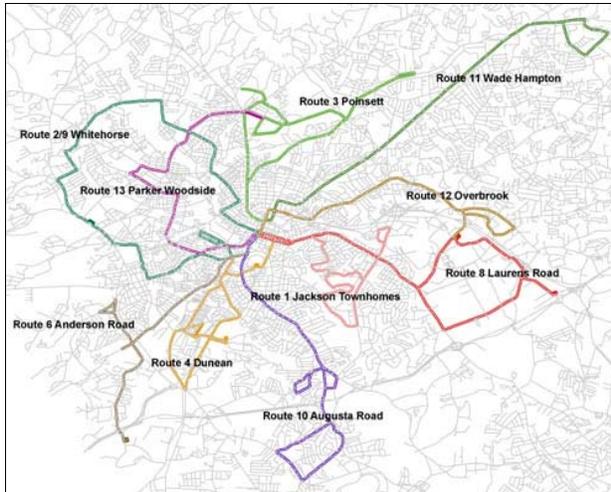
The peer areas reviewed for comparing service efficiency were also examined to gain an understanding of what types of service delivery options are used elsewhere. The areas reviewed included Augusta, Georgia; Montgomery, Alabama; Columbia, South Carolina; Greensboro, North Carolina, and Lexington, Kentucky. What is interesting to note is that all of the systems are primary hub and spoke or radial design with downtown central hubs. This is largely a function of the street patterns found in these cities, which are similar to Greenville. Notable observations among the systems include:

- Augusta Public Transit has two transfer centers, one downtown, and one in south Augusta. In addition to operating urban service, August Public Transit operates rural transportation services within Richmond County.
- Columbia/Central Midlands Regional Transit Authority (RTA) and Montgomery Metropolitan Area Transit System (MATS) operate cross-town routes that complement their radial system.
- MATS operates two downtown trolley routes Monday through Saturday on 20-minute frequencies.
- The Greensboro Transit authority (GTA) has five connector routes that serve the outer areas and connect to main trunk routes.
- Lexington’s LEXTRAN operates a number of circulator and express routes in addition to its radial routes.

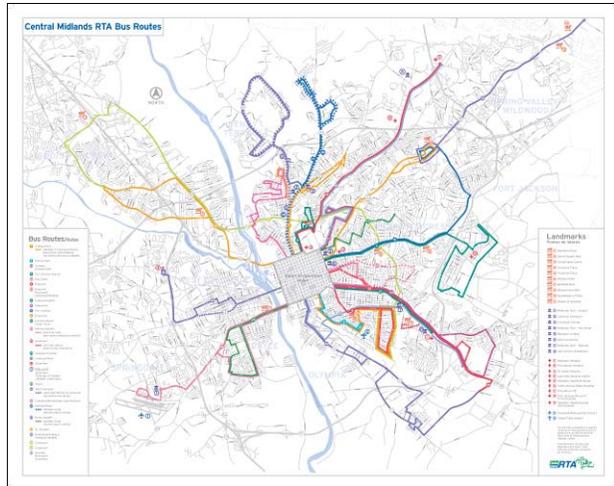
An illustration of the route maps from the systems is shown in Figure 3.

Figure 3: Route Map Comparison across Peer Systems

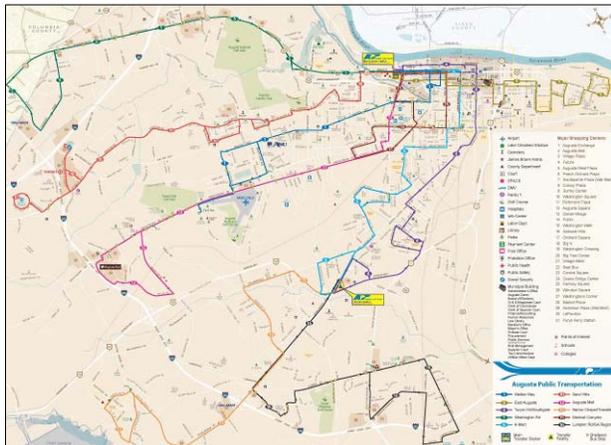
Greenville, SC/Greenlink



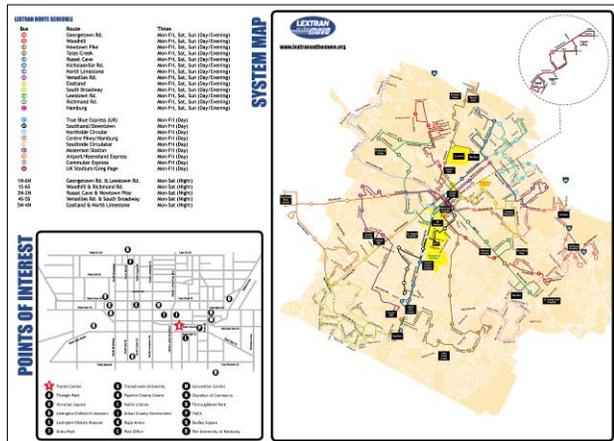
Columbia, SC/Central Midlands RTA



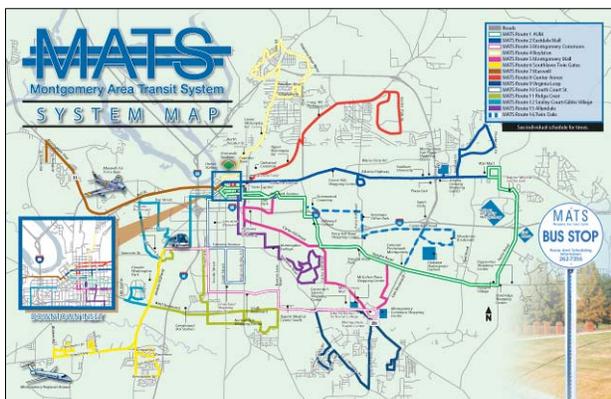
Augusta, GA/August Public Transportation



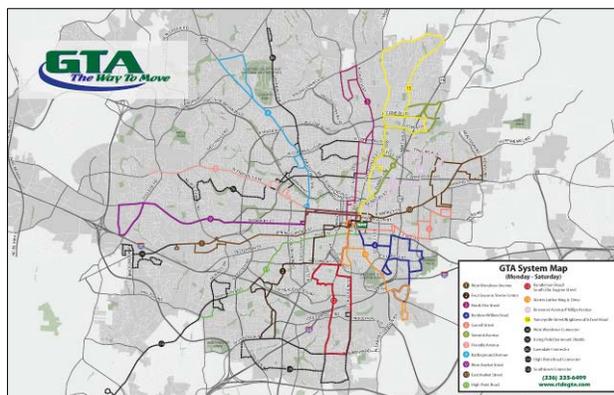
Lexington, KY/LEXTRAN



Montgomery, AL/MATS



Greensboro, NC/GTA



3.1.3 Service Standards

Greenlink currently does not have documented service standards for their transit operations. Many transit authorities use the following measures and corresponding standards for evaluating route effectiveness and vehicle occupancy:

Passengers per scheduled revenue vehicle hour - measures the effectiveness or productivity of a transit system. To measure the effectiveness of the routes in the Greenlink system, a comparison of the individual routes to the system wide productivity has been performed.

Cost per passenger - is a measure of the efficiency of the transit system.

Load factor - is a measure of vehicle occupancy. A load factor of 1.0 would mean that all the seats are taken (load factor is the ratio of passengers to seats at the maximum load point). Because Greenlink buses are designed to accommodate standees, load factors of greater than 1.0 are acceptable during peak periods. The average load factor for a local route should be in the range of 0.75 to 1.25 during peak hours and between 0.5 and 1.0 during off-peak hours. Individual trips should not exceed a load factor of 1.5 or fall below 0.5 on a continued basis. The average load factor for an express route should be in the range of 0.5 to 1.00. Express routes typically travel longer distances than local routes, and passengers should be provided a seat. Individual trips should not exceed a load factor of 1.0 or fall below 0.5 on a continued basis.

Farebox recovery - is the percent of the operational cost that is supported by farebox revenues. Nationally, the 2008 NTD indicated that for systems nationwide, fare revenues accounted for 31 percent of operating funds. For the purposes of this study, a desired farebox recovery ratio of 20 to 25 percent or higher is considered reasonable. If a route should operate below a minimum established standard, corrective measures should be taken that could include various levels of service revisions, restructuring, or targeted marketing.

4.0 Community Views and Transit Vision

A strong public involvement program is essential for understanding community needs and issues. Elements of the *Transit Vision and Master Plan's* public involvement effort have included an extensive review of existing plans and studies, formation of a Technical and a Steering Committee, one-on-one stakeholder interviews, and a public information open house. Additional public outreach and public relations activities have included development of online surveys, Greenlink passenger survey, distribution of project information through the Greenlink website, a statistical survey of Greenville City and County residents regarding transportation funding, presentations to the County and City Councils and GTA Board, and outreach to media establishments.

4.1 Community Outreach Approach

The primary goal of the public outreach process was to reach a broad, representative audience within the area in a cost effective, strategic manner. Table 6 summarizes major public outreach activities conducted and their purpose.

Table 6: Stakeholder and Public Outreach Activities

Activity	Date	Purpose
Technical Committee Kick-off Meeting	October 16, 2009	Introduce the study, present community characteristics, and solicit study guidance and input.
Joint Technical and Steering Committee Meeting and Press Conference	October 28, 2009	Transit 101 Meeting: Introduce the study, present community characteristics, and solicit study guidance and input.
Greenlink Customer Survey	December 16, 2009	Gain insight into the current demographic characteristics, route utilization, and system satisfaction of current Greenlink customers.
GTA Board Meeting	January 25, 2010	Brief board on study status.
Stakeholder Interviews	December – January 2010	Solicit input from community stakeholders about transit needs, issues, and opportunities.
Online Survey	November – December 2009	Solicit input from the general community about transit needs opportunities.
Joint Technical and Steering Committee Meeting	February 18, 2010	Facilitate land use and transportation visioning workshop.
Public Open House Meeting	March 18, 2010	Present community characteristics and transit options under consideration, and obtain community input. Attendance at the public meeting was 50 people.
Statistical Survey of Greenville City and County Residents	April 12-19, 2010	Poll random registered voters pertaining to views on transit and potential funding options.
Greenville City Council Work	April 5, 2010	Brief council on study status.

Activity	Date	Purpose
Session		
City/County Staff Briefings	April 29, 2010 May 7, 2010	Present near-term, short and mid-term, and long-term recommendations for review and comment.
Mauldin Stakeholder Meeting	May 13, 2010	Discuss recommendations for route and service alternatives.
GTA Board Briefing	May 24, 2010	Present draft final recommendations to GTA Board.
Multi-jurisdictional Meetings	May 25, 2010	Present draft final recommendations.
Joint Technical and Steering Committee Meeting	May 26, 2010	Present draft final recommendations to the study committees.
Greenville County Intergovernmental Relations Committee Briefing	June 1, 2010	Present draft final recommendations to the County.
Greenville City Council Briefing	June 7, 2010	Present draft final recommendations to the City.
GPATS Policy Committee Briefing	June 21, 2010	Present draft final recommendations to GPATS.
Plan Adoption by GTA Board	July 26, 2010	

4.2 Community View Summary

A wide-variety of input was provided about the state of the existing Greenlink transit system, what the future system should be, funding, and the types of transit services that are appropriate for the area. Major themes expressed from all sources include the following:

The existing Greenlink system has:

- Improved operations and reliability under City.
- Greenlink patrons are generally satisfied but want more frequent service, longer service hours, and more destinations served.
- The current system is inadequate for area population and destinations.

Greenlink can be improved by:

- Creating a system that is community oriented, convenient, and efficient.
- Expanding service to unserved areas with improved connectivity.
- Utilizing a variety of bus technology options.
- Taking a regional approach.
- Ensuring system stability with adequate financial resources.
- Utilizing Greenlink to enhance livability and economic development.

Regarding service funding, it is realized that Greenlink will need:

- Long-term dedicated funding solutions.
- Seriously consider sales-tax and other public funding alternatives.
- Think about transit as a component of a broader transportation approach.
- Achieve broad based community support which will affect political will.

In order to improve Greenlink, the following actions are required:

- Create a viable transit network and service that is supported by community.
- Establish phased service improvements.
- Identify a dedicated funding source.
- Build upon successes.

Appendix C includes the compilation of community outreach materials and notes as well as a summary report containing the results of the plan review, input from the Greenlink and online surveys, stakeholder interviews, stakeholder meetings, and public input.

4.3 Transit Master Plan Vision

The purpose of developing the *Transit Vision and Master Plan* is to assist Greenlink and the region in identifying and establishing the necessary policies and funding to sustain a viable transit system to meet both the immediate needs and those inherent with future economic and community development. A comprehensive transit plan developed through a collaborative process involving a broad range of stakeholders will result in defining the steps and process required to improve and expand service; raise awareness for the needs and role of transit; identify dedicated local funding sources; and integrate transit, community, and economic planning. The ultimate objective for developing a Transit Master Plan Vision for Greenlink is to reach consensus on a very important policy decision about the role of transit in the transportation system. The transit vision and supporting goals were developed to guide the system through the implementation of the plan. The vision and goals considered those identified through prior planning initiatives and input received through the plan development.

4.3.1 Transit Vision Statement

The Greenlink Transit Vision provides the overarching direction desired for GTA and Greenlink, as follows:

Greenlink supports the mobility, livability, and economic vitality of the Greenville region by:

- Providing convenient, safe, reliable, efficient, and financially sound public transit service, and
- Playing an increasingly important role in the community's transportation system.

4.3.2 Goals

Goals identified to support the transit vision include:

- Provide reliable and convenient service.
- Identify and establish long-term funding plan.
- Expand transit service options and connectivity.
- Increase community and public support through successful, phased service implementation.
- Tailor service to appropriately support and influence travel patterns, land use, and development.
- Expand regionally.

Plan recommendations included within the *Transit Vision and Master Plan* support implementation of the Plans' Vision and Goals.

5.0 Near-Term System Improvements

Near-term service recommendations were identified for Greenlink to undertake within the next one to two years. The near-term improvements focus on lower cost actions to achieve immediate changes to improve system operations. No major system revisions are recommended for the near-term. Major service improvements are contingent on obtaining a significant funding source, which is not available during this time frame.

5.1.1 System Ride-Check

The route network has experienced severe reductions in both service and coverage over the years primarily due to funding shortfalls. In order to maintain service to various communities, this process has resulted in a system configuration with an inefficient and circuitous route structure that makes major route modifications challenging. A comprehensive ride check of the system has not been undertaken in recent years and, in order to obtain meaningful stop level passenger activity, comprehensive route schedule adherence, and other pertinent data, it is recommended this action be undertaken in conjunction with other planning partners as resources allow.

5.1.2 Paratransit Service Modification

Paratransit service is challenging to operate as each daily schedule differs based on customer requests and the system's ability to meet the requested demand. Current utilization on the Greenville Area Paratransit (GAP) service is very low with approximately 30 passenger boardings per weekday. The Greenlink staff is in the process of expanding the service coverage through eliminating "pockets" within the core service area where the three-quarter mile distance does not touch an adjacent route. Consideration could be given to providing selected day/scheduled group trips from senior and/or service centers to common shopping destinations. Care must be taken to effectively balance service demand and resources as paratransit service inherently contains the lowest productivity and the highest unit operating cost.

5.1.3 Facilities

At the request of the City of Greenville, GTA undertook a study in 2004 for relocating Augusta Street operating facility due to redevelopment in the West End section. While relocation has not occurred to date for a number of reasons, it is believed that operational synergies and economies of scale could result from co-located transit operations and maintenance with the City's Public Works and vehicle maintenance operation. Thus, there remains a desire for the City and Greenlink to share space for this purpose at a common and relocated facility. To ensure provision is included for a new operating facility, the *Transit Vision and Master Plan* capital budget contains future funding for this facility.

The downtown Transit Center provides covered space for Greenlink and Greyhound bus services as well as taxicab boarding and alighting. Improvement categories such as aesthetics and lighting are elements of an ongoing renovation project and will increase the attractiveness and functionality of this facility.

The recent installation of new bus stop signs throughout the system is helping to improve systemwide schedule adherence through established stop locations. In a field review of the route network, it was noted that many of the signs have been installed on utility poles and traffic regulatory sign posts. As time and resources permit, all signs should be placed on individual/dedicated posts to avoid conflicts with other infrastructure.

The remaining older shelters that are no longer functional should be removed and replaced, if justified, with new shelters through the ongoing shelter acquisition program. Consideration is currently being given to transitioning the bus shelter program to an advertising vendor which will not only have the potential to generate additional revenue for Greenlink, but save on the ongoing maintenance, cleaning, and replacement expenses.

5.1.4 Transit Bus Fleet

The existing Greenlink buses are aging and have increasing maintenance demands. The City of Greenville has made a major effort to improve the reliability and safety of the vehicles. Greenlink has nine new transit buses currently on order to replace the majority of the existing vehicles. Seven of the vehicles were funded by the federal (American Renewal and Recovery Act) ARRA Stimulus funds. Two others were supported by the FTA, with local matching funds provided by the City of Greenville and Greenville County. As capital funding opportunities allow, consideration should be given to continuing replacement of the remaining older units. The new Greenlink bus/van paint well complements the system's image; however, consideration should be given to expanding the possibility of exterior bus/van advertising as an additional revenue source.

5.1.5 Technology

To assist Greenlink staff in achieving more reliable data reporting capability from the GFI fare data system, a review of the current system and data processing was conducted on site during March 2010. Based on this review, recommendations pertaining to additional staff training and hardware upgrades were made.

There are a number of Intelligent Transportation System (ITS) elements that can be beneficial to transit management, operations, and customers. As many of these ITS elements are interrelated such as Automated Vehicle Location (AVL), Automated Vehicle Monitoring (AVM), Automated Passenger Counting (APC), automated customer information, automated fare collection, and safety and security elements, they require significant funding and technical support. Greenlink is deploying the following ITS transit related components:

- Automated Vehicle Location (AVL);
- Dedicated frequency and a radio dispatch system for all new and existing buses; and
- Surveillance cameras to be installed on each bus.

Consideration should also be given to installing surveillance camera system and customer information displays in the Transit Center.

5.1.6 Customer Information

Greenlink customer information includes provision for telephone inquiries, website, and printed materials such as rider notices and public time tables. Telephone inquiries for service related issues and information are adequately accommodated through duty supervisors at the Transit Center. The Greenlink website is comprehensive and contains current information about the system and services. The eleven public time tables should be reviewed for accuracy of content and graphic redesign. All requests for service should be recorded into a log format and periodically reviewed for demand categorization and to prioritize implementation as resources become available.

5.1.7 Transportation Demand Management (TDM)

Transportation Demand Management (TDM) programs are designed to address the “demand side” of transportation, effecting a reduction in drive-alone travel by shifting trips to alternative modes such as transit, carpooling, or vanpooling or by reducing trips through programs such as teleworking or flexible work schedules. The Greenville area’s congestion is increasing along with the price of fuel, and commuters are beginning to express interest in more alternatives to the single occupant vehicle. In order to move towards a more significant and proactive role in the development of an effective and comprehensive transportation system, commuting alternatives such as carpooling, vanpooling, transit, bicycling, walking or teleworking should begin to be considered from a regional perspective. Since transit is a component of these TDM or Commuter Assistance Program strategies, key entities including local, state, and private organizations such as major employers should begin to explore the applicability of establishing a program of this type for the Greenville region.

Among the most effective implementation mechanisms for Commuter Assistance Programs is to house the program at the regional or statewide level, where economies of scale and branding-consolidation efforts can best be achieved. Many TDM programs are housed within a regional planning organization, such as a Metropolitan Planning Organization, or within a district or statewide transportation agency (i.e., a DOT or in some cases, a transit agency). While some implementation agencies operate in the non-profit or public-agency realm (for example, assigning TDM responsibilities to individuals already employed by a transit agency or transportation department), many successful TDM programs have been put to competitive bid and are operated effectively by the private sector.

6.0 Short and Mid-Term Improvement Plan

The recommendations for short to mid-term transit system improvements, route network restructuring, and new transit services were developed for a three to five year implementation period. The recommendations were designed to begin the incremental improvements to the service that will lead to the Long-Term Vision. A major restructuring of the existing fixed route system is necessary to ensure meaningful service expansion and improvements are implemented. As existing services are revised and new services introduced through the implementation process, a periodic review of transit staff positions should be conducted to ensure that the necessary elements are available to support system expansion. The improvement plan was structured to transform the existing eleven route system, hourly frequency, and downtown radial configuration into a more flexible, frequent, and convenient system that includes:

Fixed Routes - Designed to transport individuals on a vehicle which operates along a prescribed route according to a fixed schedule (Greenlink currently operates eleven fixed routes). The Short/Mid-Term Plan consists of nine fixed routes.

Circulator Routes - Designed to complement the fixed route network, offering services that enter into areas such as neighborhoods, shopping malls, and office parks; provide local trip making; and operate on secondary roadways. Circulator routes are generally confined to a designated area and provide intercommunity trips via transfers to other bus or rail services. The Short/Mid-Term Plan entails one circulator route.

Flex Routes - Involve a transit vehicle(s) operating along a fixed route, making scheduled stops along the way. Vehicles are allowed to deviate from the route to pick up and drop off passengers within a three-quarter mile buffer upon request (this eliminates the need for complementary ADA paratransit service). The vehicle then returns to the fixed route at the point at which it departed to accommodate the request. The Short/Mid-Term Plan entails two flex routes.

On Call Service - Demand responsive service that provides connections to major shopping, medical, or transportation hubs. A specific zone boundary is established and residents or workers within the zone are eligible to use the service. Service uses accessible vehicles so no additional ADA complementary paratransit service is required. Transit systems that have implemented on call service carry between five to 12 passengers per hour compared to two passengers per hour for General Public Dial-a-Ride. Because the service is flexible in nature, the on call vehicle(s) can operate within a variety of land uses and demographic areas. This enables the service to be available to a wide range of potential users, including those without a personal vehicle, those who would prefer to utilize transit over driving, and those who are interested in “green” mobility options. The Plan envisions three on call service routes.

Downtown Trolley - Typically operate in downtown areas, are linear in nature, and provide frequent service. One trolley route is recommended for downtown Greenville.

Express Service - Intended to travel faster than normal bus services between the same two commuter points. These routes usually travel between the downtown sections of cities or major

activity centers and the more residential suburbs or outer boroughs. Express buses operate on a faster schedule by not making as many stops as local bus services and often take quicker routes, such as along freeways. The Plan includes four express bus routes.

Bus Rapid Transit (BRT) - BRT is a term applied to a variety of public transportation systems using buses to provide faster, more efficient service than an ordinary bus line. Often this is achieved by making improvements to existing infrastructure, vehicles and scheduling. The goal of these systems is to approach the service quality of rail transit while still enjoying the cost savings and flexibility of bus transit. The Short/Mid-Term Plan includes the initial segment of the BRT system between downtown Greenville and CU-ICAR campus.

6.1 Short-Term Phase I and II Improvement Plan

6.1.1 Service Revision Criteria

The current Greenlink system configuration contains an inefficient and circuitous route structure that makes major route modifications challenging. In reviewing the existing route network and the vast number of areas needing service, it was determined that a general restructuring of the route network and introducing additional types of service would be required to make the system more convenient and efficient.

Considerations for restructuring the current system included:

- Current Greenlink operations, service, and populations served;
- Current and future land use and activity areas;
- Area street and travel patterns;
- Input from staff representatives of Greenlink and other planning partners;
- Future transit concepts from the GPATS LRTP and 2009 *Upstate Green Link* TIGER Grant; and
- Community input received through the current study process as well as from other prior and ongoing plans and studies.

The ideal transit system finds the proper amount and mix of services that meet the needs of the transit dependent while offering potential riders who have other mobility choices such as the automobile viable transportation alternatives. A number of conceptual transit system services were generated based on three service parameters:

- Required Level of Service – Develop a menu of conceptual/improved transit services: fixed route, flex-route, BRT, demand response, etc. and define potential expansion opportunities.
- Cost and cost effectiveness – Define alternatives that will generate reasonable return and fit within the region’s financial capacity.
- Potential Benefit/Negative Impacts – Develop alternatives that will enhance the community and its character.

6.1.2 Short-Term Phase I and II Improvements

The recommended short-term route improvements and operating statistics are described in this section. The improvements were divided into two phases Short-Term Phase I and Phase II in order to spread the capital costs over a two year period, as shown in Table 7.

Table 7: Short-Term Phase I and II Summary

Short-Term Route Improvements	Phase I	Phase II
1 - Nicholtown/Greenville Tech	✓	
2 - Poinsett Highway		✓
3 - Poinsett/Rutherford	✓	✓
4 - Cedar Lane/NW Greenville Tech	✓	
5 - Downtown Trolley	✓	
6 - Anderson Road/Greenville Hospital		✓
8A - Laurens Road/Patewood	✓	✓
8B - Laurens Road/Woodruff	✓	✓
10 - Augusta Road	✓	
11 - Wade Hampton/Easley Bridge	✓	✓
12 - Pelham Road	✓	
51 - Greenville Tech/Bob Jones University	✓	
52 - CU-ICAR Circulator	✓	
53 - White Horse Road		✓
On Call Services		✓

The following tables and narratives summarize and describe the route operating characteristics and alignment changes of the two phases of the Short-Term Improvement Plan. Note: Intersecting Routes refers to potential transfer opportunities outside of the downtown area.

1 – Nicholtown/Greenville Tech

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	8 miles	30 min	1
Saturday	0700 – 1900	8 miles	30 min	1
<p>The Nicholtown/Greenville Tech fixed route service starts at the transit center in downtown Greenville and travels east along McBee Avenue. The route continues onto East Washington Street before turning at the Cleveland Park entrance onto Cleve Irvine Avenue. The route navigates through the Nicholtown community and exits at the intersection of Glenn Road and McAlister Road. The route interfaces with the Greenville Tech/Bob Jones University flex route at a bus stop on East Faris Road before turning around using South Pleasantburg Drive and Legrand Boulevard. The route returns to the downtown area via the same outbound streets. Destinations include Publix, Staples, Cleveland Park, Greenville Zoo, Greenville Tech, and BiLo. Route 1 modifications will be undertaken during Phase I of the Short-term Plan.</p>				
Intersecting Route – 51				

2 - Poinsett Highway

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	13.5 miles	30 min	2
Saturday	0700 – 1900	13.5 miles	30 min	2
<p>The Poinsett Highway fixed route starts in the downtown area at the transit center and travels north on Richardson Street. The route turns west on College Street and continues onto Buncombe Street. The route turn north onto Rutherford Street, which becomes Poinsett Highway. At the intersection with North Pleasantburg Drive, the route turns east and transfers with the Poinsett/Rutherford route at the Cherrydale Shopping Center. The route returns to North Pleasantburg Drive and then turns north onto Poinsett Highway. The route continues on Poinsett Highway to the Old Buncombe Road exit. At the end of the exit ramp, the route turns west and goes through the Publix Shopping Center. The route then returns to the downtown area along the same route. Destinations include Greenville County Library, Cherrydale Shopping Center, and Publix.</p>				
<p>Intersecting Routes – 3 and 53</p>				

3 - Poinsett/Rutherford

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	14.4 miles	30 min	2
Saturday	0700 – 1900	14.4 miles	30 min	2
<p>Similar to the Poinsett Highway route, the Poinsett/Rutherford fixed route leaves the downtown area north on Richardson Street, west on College Street, and north on Rutherford Street. However, the Poinsett/Rutherford Route turns northeast onto Rutherford Road and follows it up to the intersection with North Pleasantburg Drive. The route then turns west on North Pleasantburg Drive and continues west to Worley Road. The route follows Worley Road north and continues across State Park Road onto Crestwood Road. The route turns into the Crestwood Apartments and returns to North Pleasantburg Drive by way of Crestwood Road and Worley Road. The route continues west on North Pleasantburg Drive to Tulip Street. Tulip Street is the entrance to the Boulder Creek Apartments. The route goes through the apartment complex and comes out on Furman Hall Road. The route turns northeast on Furman Hall Road to the Cherrydale Shopping Center. The route turns around at the Cherrydale Shopping Center and returns to North Pleasantburg Drive going east and then onto Rutherford Road going southwest. The route returns to the downtown area along the same route. Destinations include Greenville County Library, BiLo, Cherrydale Shopping Center, Crestwood Apartments, and Boulder Creek Apartments.</p>				
<p>Intersecting Routes – 2</p>				

4 - Cedar Lane/NW Greenville Tech

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0700 – 1900	11.6 miles	40 min	1
Saturday	0700 – 1900	11.6 miles	40 min	1
<p>The Cedar Lane/NW Greenville Tech fixed route begins at the downtown transit center. The route runs north on Richardson Street and then west on West Washington Street. Near the AMTRAK station, the route turns north on Mulberry Street. At the end of Mulberry Street, the route turns west on Buncombe Street, which becomes Pete Hollis Boulevard and then Cedar Lane Road. Cedar Lane Road becomes Farris Bridge Road at the intersection of West Parker Road. The route turns north on White Horse Road and ends at the Greenville Tech campus on White Horse Road. Destinations include Main Post Office, AMTRAK, BiLo, K Mart and, NW Greenville Tech.</p>				
<p>Intersecting Routes – 53</p>				

5 - Downtown Trolley

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	1000-1800	2.8 miles	15 min	2
<p>The Downtown Trolley fixed route is a weekday supplement to the existing Greenville Drive Downtown Trolley that provides service on Thursday and Friday evenings, Saturday, and Sunday. The route would begin on Main Street and travel west along College Street, right on Buncombe Street, right on Atwood Street, right on Park Avenue, right on Main Street, continue S. Main Street, left on University Street, right on Howe Street, left on University Ridge and left into the County Square complex. Destinations include downtown area neighborhoods, attractions, West End, Main Street, Reedy Falls Park, and County Square. Since this is currently a free service, consideration should be given to continuing the existing partnership while exploring additional sponsors to underwrite the cost, including various downtown area organizations the selected vehicle manufacturer.</p>				

6 - Anderson Road/Greenville Hospital

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	8.9 miles	30 min	2
Saturday	0700 – 1900	8.9 miles	30 min	2
<p>The Anderson Road/Greenville Hospital flex route starts downtown at the Public Transit Center and travels south on Rivers Street before turning west on South Main Street. The route then turns south on Green Avenue. At the intersection with Guess Street, the route turns southeast, crossing over Mills Avenue and then south on Grove Road. The route enters the Greenville Hospital property from the Grove Road side and continues around to the clinic side of the hospital. The route leaves the hospital property turning right on West Faris Road. The route turns right onto the K Mart Plaza frontage road and makes a stop in front of the stores. The route returns to West Faris Road traveling west to Anderson Road. The route turns north on Anderson Road and returns to the downtown Transit Center along South Main Street and River Street. Destinations include South Main Street, Fluor Field, Mills Mill, Greenville Hospital campus, and K Mart.</p>				
<p>Intersecting Routes – None</p>				

8A - Laurens Road/Patewood

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	14 miles	40 min	1.5
Saturday	0700 – 1900	14 miles	40 min	1.5
<p>The Laurens Road/Patewood fixed route leaves from the downtown transit center via East McBee Avenue and continues onto East Washington Street. The route turns onto Laurens Road and continues until the intersection with West Antrim Drive. The route follows West Antrim Drive, crosses South Pleasantburg Drive, and continues onto East Antrim Drive. The route returns to Laurens Road and continues east until the intersection with Haywood Road. The route turns north onto Haywood Road, then onto Halton Road. The route interfaces with the CU-ICAR circulator at the Haywood Mall before continuing onto Patewood Drive. The route makes a loop around the Greenville Hospital/St. Francis Woman’s Hospital campuses before returning to Patewood Drive and heading inbound on the same route. Destinations include Publix, Staples, Cleveland Park, Greenville Zoo, University Center, Goodwill, Haywood Mall, Greenville Hospital, and St. Francis Women’s Hospital. <i>This route alternates service with the 8B- Laurens Road/Woodruff route.</i></p>				
<p>Intersecting Routes – 12, 51, and 52</p>				

8B - Laurens Road/Woodruff

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	18.2 miles	40 min	1.5
Saturday	0700 – 1900	18.2 miles	40 min	1.5
<p>The Laurens Road/Woodruff fixed route follows the same routing as the Laurens Road/Patewood route until the Haywood Road intersection. At the Haywood Road intersection, the route continues east on Laurens Road until the intersection with Verdae Boulevard. The route turns onto Verdae Boulevard and then turns east onto Woodruff Road. The route follows Woodruff Road across I-85 and I-385 and ends at the Wal-Mart Shopping Center. The route turns around utilizing the shopping center service road and returns to the downtown area along the same route. Destinations include Publix, Staples, Cleveland Park, Greenville Zoo, University Center, Verdae Shopping Center, Embassy Suites, Costco, Target, Green Ridge Shopping Center, Sam’s Club, and Wal-Mart. <i>This route alternates service with the 8A- Laurens Road/Patewood route.</i></p>				
<p>Intersecting Routes – 51 and 52</p>				

10 - Augusta Road

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	15.4 miles	30 min	2
Saturday	0700 – 1900	15.4 miles	30 min	2
<p>The Augusta Road fixed route service starts downtown, going south on River Street. The route mainly runs the Augusta Road corridor. The bus diverts from Augusta Road to serve the Sherman Road area and then continues south along Augusta Road. The route crosses over I-85, and then turns down Crestfield Road and White Horse Road. The bus turns around at White Horse Road and US 25. Going north, the route makes stops along Old Augusta Road and South Pleasantburg Drive, prior to returning to Augusta Road towards the downtown area. Destinations include South Main Street/West End, Greenlink maintenance center, Fluor Field, YWCA, Lewis Plaza, VA Clinic, Lil Cricket, and BiLo.</p>				
<p>Intersecting Routes – None</p>				

11 - Wade Hampton/Easley Bridge

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	29.2 miles	30 min	4
Saturday	0700 – 1900	29.2 miles	30 min	4
<p>The Wade Hampton/Easley Bridge route leaves the downtown transit center going north on Richardson Street/Townes Street. The route then turns east on Park Avenue, north on Main Street, east on Stone Avenue and finally north on Wade Hampton Boulevard. The route continues north on Wade Hampton Boulevard to the city limits of Greer. The route turns around at Middleton Way and West Poinsett Street. The route returns to the downtown area along the same route. After stopping in at the Transit Center the route continues west on McBee Avenue and south on US 123/Easley Bridge Road. The route turns around at the intersection of US 123 and White Horse Road. The route returns to the downtown Transit Center before heading back north to Greer. Destinations include Bob Jones University, K Mart, Wal-Mart, BiLo St. Francis Hospital, and Target.</p>				
<p>Intersecting Routes – 51 and 53</p>				

12 - Pelham Road

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	18.5 miles	40 min	2
Saturday	0700 – 1900	18.5 miles	40 min	2
<p>The Pelham Road fixed route leaves from the downtown transit center and travels north on Richardson Street/Townes Street. The route turns east on Park Avenue and continues on to East North Street in the Overbrook community. The route continues along East North Street, past North Pleasantburg Drive, and merges onto Pelham Road. The route deviates from Pelham Road, turning south on Haywood Road and east on Orchard Park Drive. At the end of Orchard Park Drive, the route turns north on Patewood Drive and then east onto Pelham Road. The route turns off Pelham Road just before the interchange with I-85. The route follows Beacon Drive around and back to Pelham Road. The route returns to the downtown area along the same route. Destinations include Bob Jones University, BiLo, Publix, Greenville Hospital, St. Francis Women’s Hospital, and Wal-Mart.</p>				
<p>Intersecting Routes – 8A and 51</p>				

51 - Greenville Tech/Bob Jones University

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	8.8 miles	30 min	2
<p>The Greenville Tech/Bob Jones University flex route starts at the bus stop on East Faris Road, just north of the Greenville Tech main campus. The route turns north on South Pleasantburg Drive. The route makes a stop at the University Center and then continues north on North Pleasantburg Drive. The route crosses over I-385 and East North Street before turning around at the intersection with Wade Hampton Boulevard. The route returns to Greenville Tech along the same route. Destinations include Greenville Tech, University Center, Carolina First Center, BiLo, and Bob Jones University.</p>				
<p>Intersecting Routes – 1,8A, 8B, 11, and 12</p>				

52 - CU-ICAR Circulator

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0900 – 1700	10.3 miles	30 min	2
<p>The CU-ICAR Circulator starts at the Clemson University campus at CU-ICAR. The route runs northeast on Millennium Boulevard, crosses over Old Sulphur Springs Road and enters the Carolina Point development on Carolina Point Parkway. The route continues running northeast on Carolina Point Parkway, then turns into the shopping center before turning southwest on Market Point Drive. At the end of Market Point Drive, the route returns to Carolina Point Parkway, then turns west on Old Sulphur Springs Road. Old Sulphur Springs Road turns into Salters Road. The route turns north on Verdae Boulevard and continues across Woodruff Road onto Roper Mountain Road. The route turns west on Congaree Drive and continues across Patewood Drive/Halton Road. Congaree Drive becomes Woods Crossing Road behind the Haywood Mall property. The route follows Woods Crossing Road to the Mall Connector. The route turns east on the Mall Connector and then north on Halton Road. The route turns east on Congaree Road, south on Roper Mountain Road, crosses over Woodruff Road onto Verdae Boulevard, east on Salters Road and south on Millennium Boulevard to return to the Clemson CU-ICAR campus. Destinations include CU-ICAR, Carolina Point, Embassy Suites, and Haywood Mall.</p>				
<p>Intersecting Routes – 8A and 8B</p>				

53 - White Horse Road

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0600 – 2030	24 .4 miles	30 min	4
Saturday	0700 – 1900	24. 4 miles	30 min	4
<p>The White Horse Road route starts at Grove Station Apartments off Lakeside Road and heads north on Staunton Bridge Road. The route turns north onto White Horse Road and continues until the Wal-Mart shopping center. After leaving the Wal-Mart shopping center, the route continues north on White Horse Road, then turns northeast on Duncan Road, just past the Greenville Tech campus. Duncan Road becomes Watkins Bridge Road. The route turns south on Duncan Chapel Road and continues down to the Publix shopping center on Old Buncombe Road. The route turns around at the shopping center and returns along the same route. Destinations include Grove Station Apartments, BiLo, Wal-Mart, Furman University, and Publix.</p>				
<p>Intersecting Routes – 2, 4, and 11</p>				

On Call Services

Service Days	Service Hours	Length of Route	Service Frequency	Number of Vehicles
Monday – Friday	0900 – 1700	N/A	N/A	3
Saturday	0700 – 1900	N/A	N/A	3
The Short-Term Plan also include a new, flexible service, known as On Call service, for the Cedar Lane (North and South Sectors) and Wade Hampton/Taylor's areas.				
Intersecting Routes – Cedar Lane-2,3,4,11, and 53. Wade Hampton/Taylor's-11				

6.1.3 Mauldin-Simpsonville Service Alternatives

Concepts for transit service from the Mauldin/Simpsonville area have been developed over the past several years through various sources. The *Mauldin-Simpsonville Urban Area Transit Development Plan* (June 2005) reviewed and evaluated five potential services that included express, demand response, hybrid, extension of existing fixed routes, and a rideshare program. The two concepts for express bus service both connected to downtown Greenville. Concept 1 would originate at I-385 and Fairview Road and travel via I-385 making a stop at Bridges Road in Mauldin and continue along the I-385 corridor directly to downtown stopping at the GTA Transit Center and terminating at County Square. Concept 2 would also originate at I-385 and Fairview Road and operate along SC Highway 14/417 and the US 276 Corridor with four additional stops in Simpsonville and Mauldin and two stops along US 276 west of I-85 with service terminating downtown at the GTA Transit Center. In both concepts, service would operate with two peak vehicles on weekdays between 6:00 am to 9:00 am and 3:00 pm to 7:00 pm every 35 to 45 minutes providing four morning inbound and four afternoon outbound trips. Based on input from the study steering committee and additional evaluation, the transit service concept was refined to provide a flexible route service to connect Mauldin and Simpsonville to the Haywood Mall area for connection to GTA service.

In 2009, a Partnership Proposal was prepared by Greenlink to outline the general elements of a Memorandum of Understanding (MOU) between the City of Mauldin, the City of Simpsonville, and GTA/Greenlink. This MOU would be utilized to spur development of a limited scope transit service in the Golden Strip area through utilization of Federal formula funds apportioned to the cities and also funds available through ARRA. The grant funding would be utilized to acquire three transit buses and related passenger amenities.

The Partnership Proposal service concept developed included a limited stop commuter express route connecting Mauldin and Simpsonville via SC Highway 14/417/Laurens Road/Haywood Road to a transfer center on the Greenlink system that could be located in the vicinity of Haywood Mall. This service would be operated by and branded as Greenlink on weekdays between 5:30 am to 9:30 am and 3:30 pm to 7:30 pm.

The City of Mauldin Planning Department subsequently developed a conceptual weekday and Saturday route that would connect Mauldin and Simpsonville to downtown Greenville via SC Highway 14/417/Laurens Road with approximately 24 stops identified along each direction of the route alignment.

To more fully develop these concepts, and after consultation with representatives from the City of Mauldin and Greenlink, two new service alternatives were prepared as part of the *Transit Vision and Master Plan*. Both service alternatives would provide connections with Greenlink services on either Woodruff Road or in Downtown Greenville.

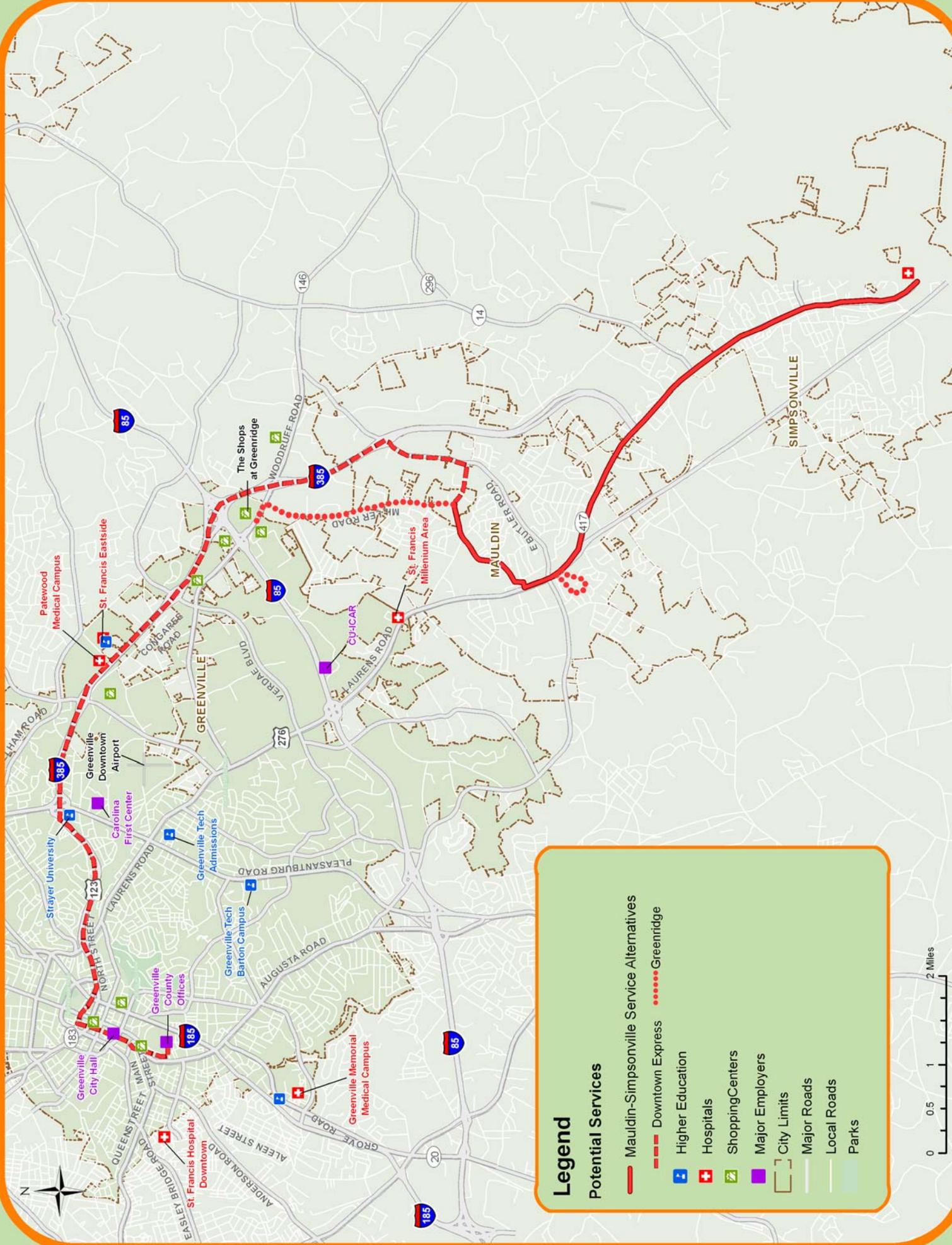
Alternative 1 would provide weekday local service originating in the vicinity of Main Street and Fairview Road in Simpsonville and travel through Mauldin to the Greenridge area via SC Highway 14/417/US 276, Jenkins Street, Miller Road and Woodruff Road to Greenridge. Bus stops would be strategically located along the route in Simpsonville, Mauldin, and Greenville.

Alternative 2 would provide weekday express service originating in the vicinity of Main Street and Fairview Road in Simpsonville and travel through Mauldin via SC Highway 14/417/US276, Jenkins Street, Miller Road, Corn Road, E. Butler Road and I-385 to Downtown Greenville/ County Square. Limited bus stops would be strategically located along the route and parking for express riders would be offered through agreements with existing area facilities.

Table 8 indicates the comparative operating characteristics of each option. The route options are illustrated in Figure 4.

Table 8: Mauldin-Simpsonville Service Alternatives

Option	Running Time (Minutes)	Frequency	Vehicles	Estimated Annual Revenue Hours	Estimated Annual Cost
Option 1: Simpsonville-Mauldin-Downtown Greenville via SC Highway 14/417/US 276, Jenkins Street, Miller Road and Woodruff Road to Greenridge	90	45	2	4,080	\$367,200
Option 2: Simpsonville-Mauldin-Downtown Greenville via Main Street, Fairview Road, SC Highway 14/417, Jenkins Street, Miller Road, Corn Road, E. Butler Road and I-385 to Downtown Greenville/County Square	90	45	2	4,080	\$367,200



Legend

Potential Services

- Mauldin-Simpsonville Service Alternatives
- - - Downtown Express
- Greenridge
- + Higher Education
- + Hospitals
- + Shopping Centers
- + Major Employers
- City Limits
- Major Roads
- Local Roads
- Parks



Further review and consideration of each alternative and any variations is recommended between the affected jurisdictions and agencies to determine the most feasible alternative(s) for implementation. To ensure adequate resources are available for potential future service expansion, two additional buses and a park and ride lot have been identified for future implementation.

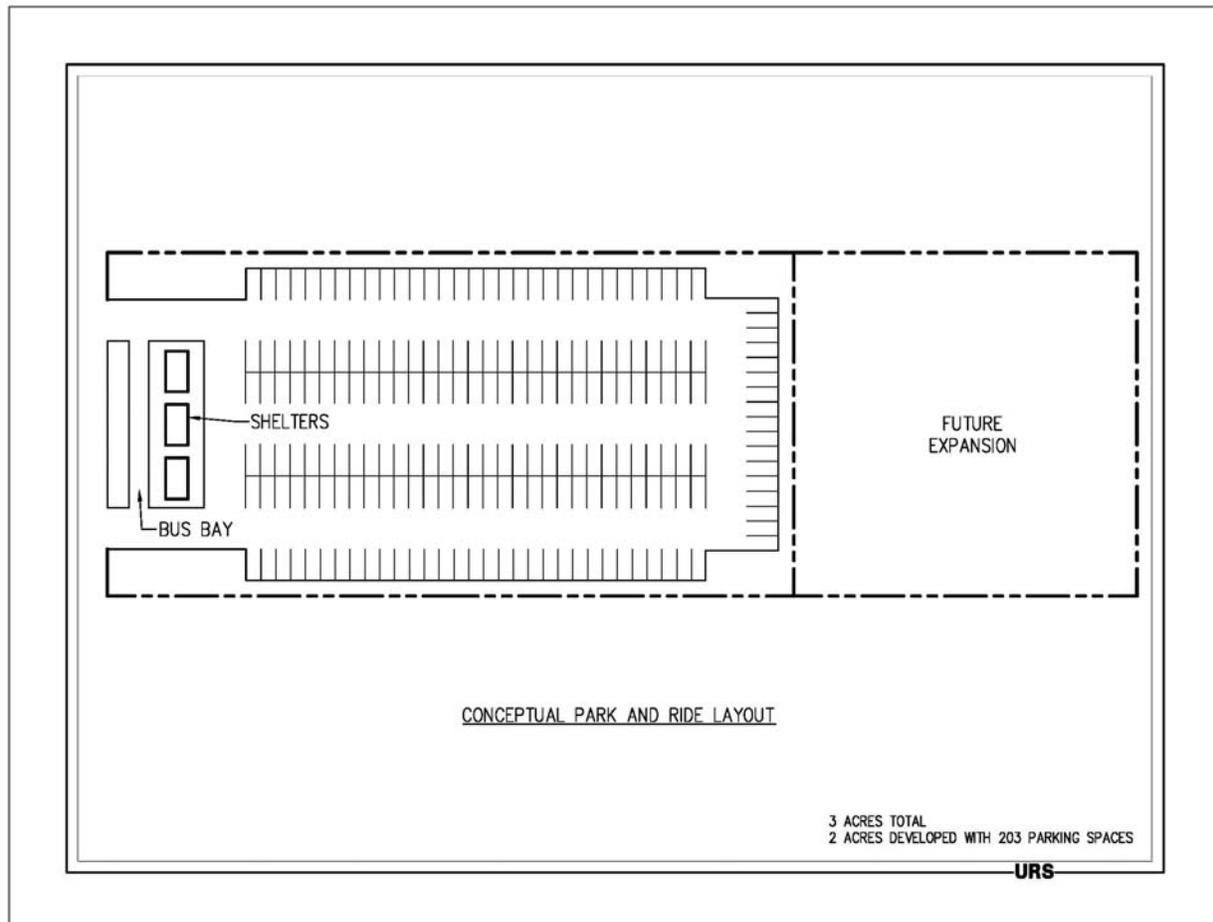
6.2 Mid-Term Improvement Plan

The Mid-Term Improvement Plan incorporates elements of the GPATS Long Range Transportation Plan (LRTP) that are regional in scope. In this phase of the plan, three express bus services and associated feeder routes would be implemented. These services are described as follows:

- **GSP Airport Express** – The GSP Airport Express route is expected to be introduced into the system around 2015. The weekday express route will connect between downtown Greenville, GSP airport and downtown Greer. The route would primarily run along I-385, I-85, and SC 14.
- **Greer Express** – The Greer Express route will provide weekday morning and evening peak, limited-stop service from the city of Greer to downtown Greenville. The route would primarily run along Wade Hampton Boulevard. The Greer Express is expected to be added to the system around 2015.
- **Travelers Rest Express** – The Travelers Rest Express route is expected to be introduced around 2018, in advance of the BRT introduction to the area in 2022. The express route would primarily run along US 276 between Travelers Rest and downtown Greenville during the weekday morning and evening peak hours.
- **Bus Rapid Transit (BRT)** – As presented in the *Multimodal Transit Corridor Alternatives Feasibility Study* recently completed through the GCEDC, implementation of the recommended BRT/Main Street alternative is included in the Mid Term Improvement Plan. This service would operate as the four mile trunk line for the future BRT system. The service would originate in the vicinity of CU-ICAR and utilize the former Greenville and Northern (G&N) Rail Line, now owned by GCEDC, to the vicinity of Pleasantburg Drive and then proceed to downtown Greenville during weekday morning and evening peak periods. This corridor takes advantage of a tremendous opportunity to utilize the existing unused railroad which can be developed as a multimodal corridor in one of the most congested parts of the region: the corridor between downtown Greenville and the Golden Strip. The rail corridor parallels Laurens Road and approximately five strategically placed stations would be provided between CU-ICAR and downtown. Implementation of this service would also present an opportunity for the potential development of a new multi service transit center within the CU-ICAR area to accommodate not only BRT services, but to facilitate interface with circulator and suburban connector services.
- **Feeder Service** – Feeder service in the cities of Greer, Travelers Rest, Mauldin, Simpsonville, Fountain Inn, Easley, Pickens, Liberty, and the Powdersville area would be added to the system to coincide with the BRT expansion. The weekday feeder service is envisioned to start with cutaway vans and would connect with other system routes including the BRT services.

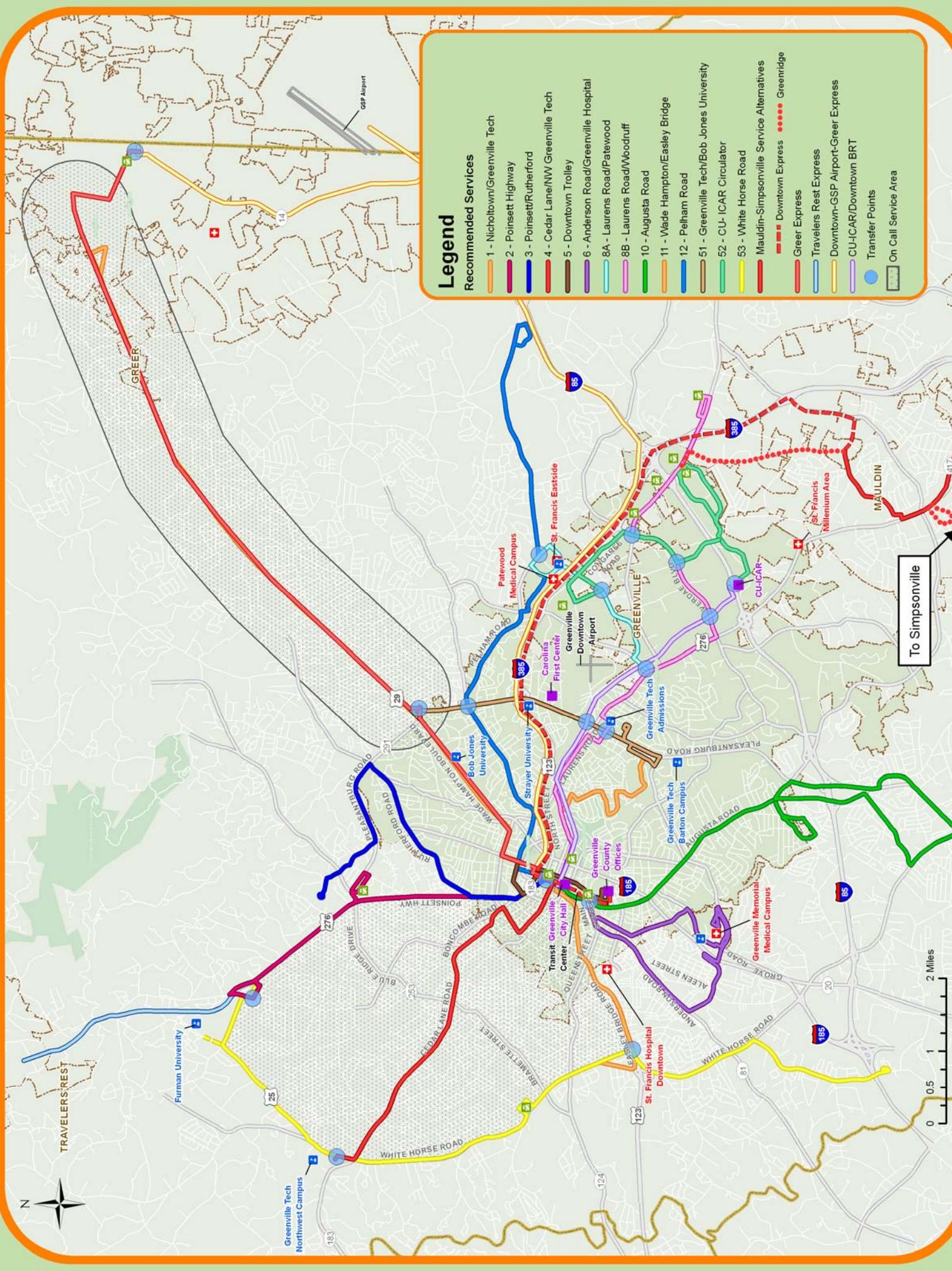
Capital funding is included for the park and ride lots in the areas of Mauldin/Simpsonville, Travelers Rest, and Greer. A conceptual drawing of a typical suburban, stand-alone park and ride lot is shown in Figure 5. This type of facility could be developed as part of a private-public partnership with mixed use development. As shown in the drawing, the lot contains approximately 200 spaces and bus access provision on the developed portion of two acres within a three-acre parcel, with excess land available for future expansion.

Figure 5: Park and Ride Lot Prototype



The revised system network and services for the short and mid-term improvement recommendations are shown in Figure 6. Bus stops and shelters should be placed, as within the current Greenlink system, with consideration given to safety, spacing, and passenger access and convenience.

SHORT/MID-TERM GREENLINK SYSTEM



Legend

- Recommended Services**
- 1 - Nicholton/Greenville Tech
 - 2 - Poinssett Highway
 - 3 - Poinssett/Rutherford
 - 4 - Cedar Lane/NW Greenville Tech
 - 5 - Downtown Trolley
 - 6 - Anderson Road/Greenville Hospital
 - 8A - Laurens Road/Patewood
 - 8B - Laurens Road/Woodruff
 - 10 - Augusta Road
 - 11 - Wade Hampton/Easley Bridge
 - 12 - Pelham Road
 - 51 - Greenville Tech/Bob Jones University
 - 52 - CU-ICAR Circulator
 - 53 - White Horse Road
- Mauldin-Simpsonville Service Alternatives**
- Downtown Express
 - Greer Express
 - Travelers Rest Express
 - Downtown-GSP Airport-Greer Express
 - CU-ICAR/Downtown BRT
- Transfer Points
- On Call Service Area

To Simpsonville



7.0 Long-Term Transit Master Plan

The long-term recommendations were developed for a ten-year implementation period. The recommendations provide a regional expansion of Greenlink focused on extended BRT from the mid-term trunk line with a complementary bus feeder system. Previous studies and plans identified various BRT alternatives. The GPATS LRTP developed a *BRT Concept Plan* consisting of two regional BRT routes and other regional transit services. Two regional BRT lines would converge on a dedicated bus-only roadway from East Washington Street in downtown Greenville and travel along an abandoned rail corridor to the CU-ICAR campus east of I-85. The east-west line would serve Clemson, Liberty, Easley, Greenville, Verdae, CU-ICAR, and GSP Airport. The north-south line would serve Fountain Inn, Simpsonville, Mauldin, CU-ICAR, Verdae, Greenville, Furman University, and Travelers Rest. A feeder route would connect downtown Pickens and the Pickens County government complex to the regional route at Liberty and at Easley. Other downtowns in the region would be served by feeder routes as well, and Greer would have connections to Greenville along Wade Hampton Boulevard and to GSP Airport. The BRT transitway or trunk line was described and included for implementation within the Short/Mid-Term Improvement Plan.

Subsequently, the GCEDC conducted the *Multimodal Transit Corridor Alternatives Feasibility Study* to determine the feasibility of a high-capacity transit system between the Cities of Greenville, Mauldin, Simpsonville, and Fountain Inn. Six alternatives were evaluated that included BRT/Main Street, BRT/I-385, Diesel Light-Rail Transit, Light Rail Transit, Commuter Rail, and Streetcar. The Study recommended that the GCEDC proceed with the BRT/Main Street alternative into the implementation stage.

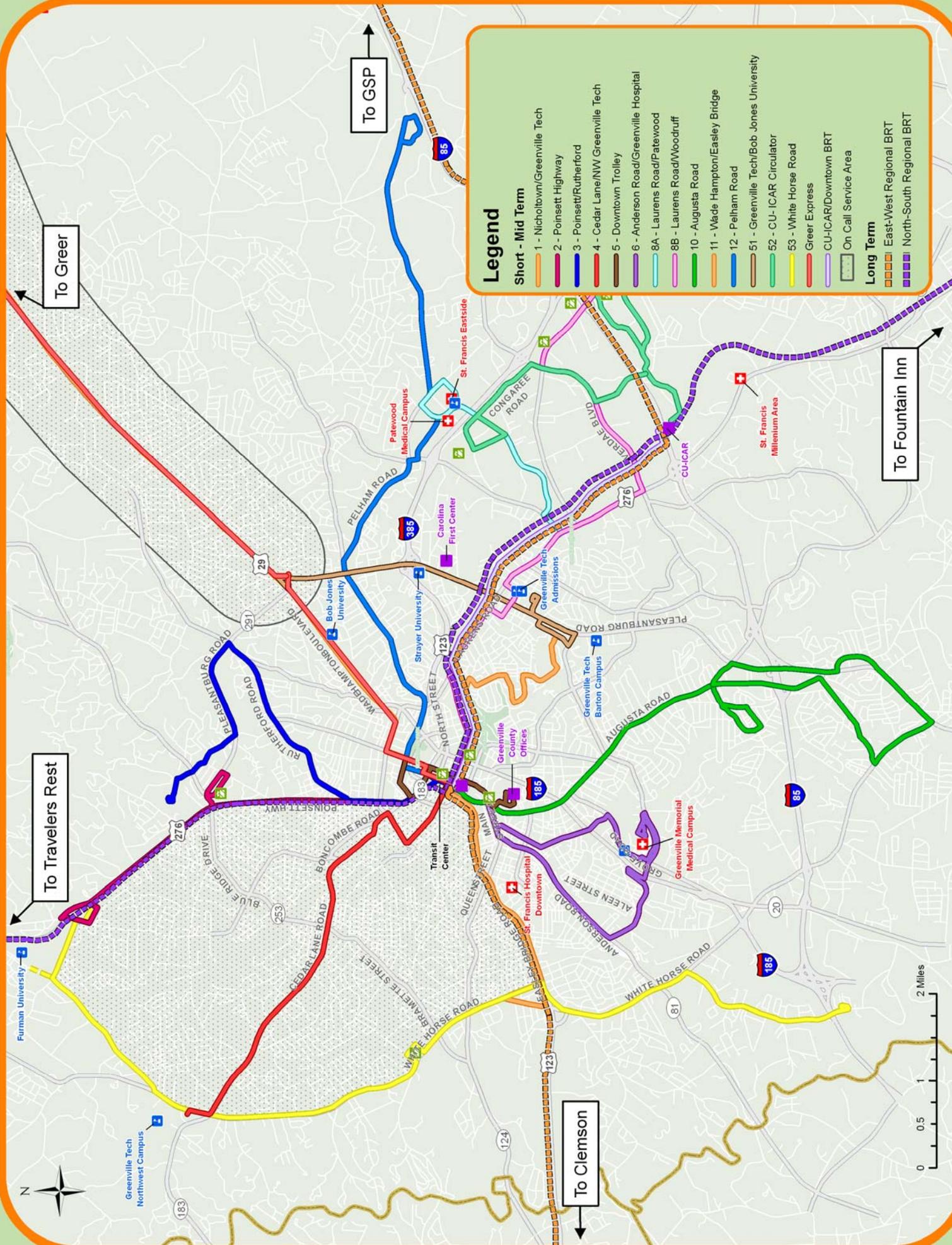
In 2009, a proposal was prepared by GTA in partnership with multi jurisdictions to respond to the Transportation Investments Generating Economic Recovery (TIGER) Discretionary Grant Program. The *Upstate Green Link* proposal expanded upon the GPATS LRTP to include transportation project components with goals for:

- Encouraging economic development and green job creation, improving air quality and safety, and reducing dependence on foreign oil; and
- Providing a model for economic, environmental, and social sustainability through promotion of transit oriented economic development.

In addition to the LRTP BRT infrastructure elements, the proposal included alternative fueled transit vehicles and fueling stations, pedestrian and bicycle connections to public transit to support transit oriented design in urbanized areas, and a LEED-Certified Multi-Modal Transportation Center serving citizens and university students in four counties.

In developing the long-term improvements for the *Transit Vision and Master Plan*, focus was placed to build upon the existing LRTP and TIGER Grant plans. This strategy was utilized throughout the planning process to ensure that the short and mid-term improvements would effectively complement the long-term plan. The revised system network and services for the long-term regional improvement plan are shown in Figure 7.

LONG-TERM GREENLINK SYSTEM NETWORK



Legend

Short - Mid Term

- 1 - Nicholtown/Greenville Tech
- 2 - Poinsett Highway
- 3 - Poinsett/Rutherford
- 4 - Cedar Lane/NW Greenville Tech
- 5 - Downtown Trolley
- 6 - Anderson Road/Greenville Hospital
- 8A - Laurens Road/Patewood
- 8B - Laurens Road/Woodruff
- 10 - Augusta Road
- 11 - Wade Hampton/Easley Bridge
- 12 - Pelham Road
- 51 - Greenville Tech/Bob Jones University
- 52 - CU-ICAR Circulator
- 53 - White Horse Road
- Greer Express
- CU-ICAR/Downtown BRT
- On Call Service Area

Long Term

- East-West Regional BRT
- North-South Regional BRT



8.0 Action Plan and Summary

A phased Action Plan has been prepared to summarize the various elements of plan implementation. Additionally, the funding sources and financial plan necessary for achieving the plan's goals is presented.

8.1 Plan Implementation

The following actions are outlined for implementing the recommended *Transit Vision and Master Plan* elements. The primary responsibility for undertaking these actions is Greenlink, supported by the City of Greenville and Greenville County. Table 9 presents actions to expand the transit system, and Table 10 presents actions to undertake transit-supportive land use initiatives.

Table 9: Transit Action Plan

Action	Near-Term	Short/Mid-Term	Long-Term
Conduct full system on-board ride check to record stop level time and passenger activity	●		
Implement Paratransit transit service revisions.	●		
Review bus stop installations for individual post retrofits	●		
Explore potential of shelter and bus exterior advertising programs	●		
Review public time tables for consistency and potential graphic redesign	●		
Consider procurement/installation of vehicle and facility camera systems	●		
Initiate process to record service requests	●		
Implement GFI system data reporting enhancements	●		
Explore with planning partners, potential for TDM program initiation	●		
Consider formation of new transportation authority	●		
Establish a Community Transit Task Force	●		
Decide on pursuing voter referendum for a ½ cent sales tax for transit, transportation, sidewalks, trails, etc.	●		
Consider utilizing new marketing and public relations strategies.	●	●	●
Proceed to finalize and adopt service plan to implement bus service between Mauldin-Simpsonville and Greenlink		●	
Initiate process to implement short-term Phase I route revisions.		●	
Initiate process to implement short-term Phase II route revisions and new services		●	
Initiate process to implement mid-term new services		●	
Initiate process to implement long-range regional transit services			●

Table 10: Land Use Action Plan

Policy or Action	Near-Term	Short-Term	Long-Term
<p>Become a regional partner in the Sustainable Communities Initiative.</p> <ul style="list-style-type: none"> Organize regionally to refine current Comprehensive Plans and the current Communities, Centers, and Corridors growth strategy for the County to best align with the new Sustainable Communities Initiative. Determine regional SCI applicant and plan assessment process. 	●		
<p>Conduct integrated land use and transportation studies for each of the primary transit corridors to create transit supportive corridor policy.</p> <ul style="list-style-type: none"> Conduct current market analysis of each of the corridors Determine appropriate transit supportive land uses, densities, multimodal transportation facilities, open space/environmental framework, land conservation, traffic mitigation alternatives, and future ROW requirements. Evaluate and improve interconnectivity to adjoining areas and between corridors. Assess Laurens Road alternative (or hybrid Laurens Rd/rail corridor) for fixed route transit service. Demand model and assess potential locations for transit and regional parking facilities. Each local government should prepare and adopt an official map (enabled by SC Code) designating the location of future transit stations and any additional rights-of-way needed. 	●		
<p>Expand the Priority Investment Areas, as defined in the Greenville County Comprehensive Plan, to include the defined transit corridors.</p> <ul style="list-style-type: none"> Prioritize capital improvements for the corridors with regard to transit supportive infrastructure and multimodal improvements. Focus and accelerate community facilities investments in these corridors: civic buildings and spaces, schools, water and sewer improvements, landscaping projects (enhancement funds, tree bank monies), etc. Create priority consideration for affordable housing. 		●	
<p>Develop Transit Station Area Concept Plans and Development Guidebook.</p> <ul style="list-style-type: none"> Create a set of community design guidelines (visual manual) to align future development with each corridor's character and sense of place. Create transit corridor and future Station Area branding collateral to convey the Vision to the development community and public. 		●	
<p>Develop a Transit Supportive Development Overlay District for primary transit corridors.</p>		●	

Policy or Action	Near-Term	Short-Term	Long-Term
<ul style="list-style-type: none"> ○ Create a TSD Overlay zoning district which encourages transit supportive land uses/densities in primary centers of activity and future transit station areas, transit supportive parking policy, traffic mitigation, multimodal transportation alternatives, and improved pedestrian connectivity. 			
<p>Refine regional greenway plans to best connect with transit corridors/future station areas.</p> <ul style="list-style-type: none"> ○ Develop strong linkages to the City and County Greenway System and to the Green Necklace and District Parks Plan, with priority investments given to linking to employment centers and activity nodes. 		●	
<p>Develop multimodal streetscape standards for the primary corridors.</p>		●	
<p>Conduct a housing needs assessment for the service area.</p> <ul style="list-style-type: none"> ○ Develop a housing affordability analysis methodology to be applied to developments within each of the transit corridors. 	●		
<p>Develop regulatory and financial incentives to support transit supportive development in each of the primary corridors.</p> <ul style="list-style-type: none"> ○ Assess incentives such as density bonuses, streamlined permitting, application fee reductions, waive/reduce impact fees assessed for roads in the area, creation of tax increment financing zones, municipal improvement districts (enabled per SC Code), and/or Business Improvement Districts. 		●	
<p>Develop continued public outreach and education on the benefits of transit.</p>	●	●	●

8.2 Financial Plan

Greenlink’s success hinges upon the region’s ability to implement a sustainable funding source with enough of a yield to maintain the system and support its growth. National experience indicates that a dedicated sales tax is the most commonly utilized funding source. The capacity for near-term, short/mid-term and long-term service improvements are completely predicated upon the availability of funds. The near-term service plan is as close to cost-neutral as possible. Implementation recommendations for the short, mid, and long-term plan will require a new source of dedicated funding. This section addresses the cost of recommended improvements as well as viable means to fund the improvements.

8.2.1 Financial Plan

A ten-year financial plan reflecting recommended plan investments in the Greenlink system was developed. The plan includes operating and capital requirements as well as potential funding sources. A number of assumptions were made in development of the financial plan. Any changes to the assumptions would change the plan. The financial plan assumptions include the following:

- The system will face substantial increases in operating costs in the years 2013, 2014, 2016, and 2020 including paratransit (as a percentage of transit) because of the implementation of service improvements.
- All capital purchases to support increases in service are accounted for including maintenance, facility upgrades, rolling stock, and BRT guideway planning and construction.
- The use of FTA Section 5307 funds for capital cost of contracting was capped to no more than 40 percent of allocation. It is reasonable to use these funds for capital investments because the federal funding participation rate is 80 percent rather than 50 percent.
- The Mauldin/Simpsonville urbanized area FTA Section 5307 allocation would be incorporated into this budget and 50 percent of the allocation used for operating expenditures. Note these rules could change if the separate Mauldin/Simpsonville region becomes part of a larger Greenville urbanized area as a result of 2010 Census.
- Operational funds from farebox receipts are assumed at 10 percent.
- The system would continue to receive a small allocation of operating assistance from SCDOT.
- Bus purchases and maintenance upgrades for the period from 2011 to 2014 could be funded through FTA discretionary grants programs.
- The system would receive a contribution from Proterra for new technology bus.
- A sales tax referendum would be undertaken in two years, and one year of collection and revenue would be available for the FY 2014 operating year. This means about \$12.2M in local funding would be required from 2010 through 2013.
- FTA Small Starts grant could be applied for to fund the BRT transitway with a 55/45 split with a Full Funding Grant Agreement (FFGA) of \$25M. GTA may need to bond \$20M. If bonds were undertaken, a bond payment of \$2M for 15 years would begin in 2016.

The financial plan estimates are summarized in Table 11. A more detailed breakdown is included in Appendix D.

Table 11: Greenlink Financial Plan

Category	Current	Year 3	Year 4	Year 6	Year 10
Peak Vehicles	11	25	34	42	61
Routes/Services	11	15	18	22	24
Revenue Hour Estimate (in 1,000 Hours/Year)	44	93	132	151	215
Operating Cost Estimate (in Million \$/Year)	\$3.5	\$8.9	\$12.3	\$13.0	\$20.3
Capital Cost Estimate (in Million \$/Year)	< \$1	\$29.2	\$20.7	\$17.5	\$25.1

8.2.2 Funding Sources

Due to the ongoing expense associated with providing public transit service, the amount of reasonable fare that can be charged to users is not sufficient to cover the entire cost. Funding transit operations requires a subsidy from various revenue sources to cover the excess cost. In

the case of Greenville, GTA's current operating budget of approximately \$3,500,000 is derived from the following revenue sources, as are most transit agencies:

- Passenger fare revenue
- Local funds (city/county)
- State funds
- Federal assistance
- Other funds

In addition, while federal assistance sources are more available for capital expenditures, they require matching funds that must also be obtained through local sources.

Over the past several years, a number of trends have emerged as shown below that indicate why consideration of new sources of local or regional funding is becoming more critical.

- The level of investment in transit is not keeping pace with the need for adequately maintaining equipment and facilities, sustaining current service levels, and providing resources to expand systems and services to address increasing travel demand.
- There has been some shift away from local government general fund assistance as transit funding is dependent on yearly budget decisions from the affected jurisdictions.

A wide range of numerous funding sources was identified and evaluated, based on review of transit agencies nationally and what may be legislatively permissible for Greenville. Potential funding sources include taxes on sales, vehicle mileage, fuel, accommodations, and admissions and fees on deeds and vehicle registration. Brief descriptions of each category are provided as follows.

Sales Tax - A sales tax could be proposed and marketed as a half cent with half to fund transit and the remainder designated for additional transportation projects such as sidewalks, trails, and other improvements. If transit receives a quarter cent—the minimum amount to be worthwhile—the system would be fully funded for over 20 years, and GTA would have the option of funding BRT totally locally. If a federal New Starts or other source is secured, GTA could implement a Local Assistance Program (LAP) which would be established to fund small capital projects for municipalities or the County to implement transit supportive improvements within their jurisdictions. This would be a positive way to promote the tax for referendum and could also discontinue the current year to year allocation of funding from the city/county general funds.

Vehicle Mileage Tax (Wheel Tax) – Motorists are taxed on the number of miles driven per year.

Deed Recording Fee - The Deed Recording Fee is a robust funding source and has a local option. However, it does not have a logical connection with transportation because it is a property-based program. It could potentially be marketed based on the economic development potential of transit programs.

Motor Fuel Tax – A Motor Fuel Tax is an excise tax imposed on the sale of fuel. In most countries, the fuel tax is imposed on fuels which are intended for transportation. In the United States, the fuel tax receipts are often dedicated to transportation projects so that the fuel tax is considered by many a user fee.

Vehicle Registration Fee - The Vehicle Registration Fee is an enabled option although it would also require a referendum. The fee would need to be \$30 to \$40 per vehicle countywide to sustain the transit system for approximately 10 to 15 years. The vehicle registration fee also could be partnered with existing funds from city/county. However, this fee might be difficult to market to rural areas.

Accommodations Tax (Hotel) – This tax is a fee paid by guests staying at hotels, motels, and other lodging establishments. The tax is generally a percentage of the hotel room rate.

Admissions Tax – An admissions tax is collected by all places of amusement when an admission price is charged. The tax is generally a percentage of the paid admissions.

Table 12 presents potential sources of revenue and estimated yields for the Greenlink System. It should be noted that the estimates shown are for planning-level use only and are not investment grade calculations.

Table 12: Potential Transit Funding Sources

Source	Estimated Yield (Million \$ per Year)
Greenville County ½ Cent Sales Tax	\$35
Vehicle Mileage Tax (Wheel Tax)	\$6.6
Deed Recording Fee	\$4.4
Motor Fuel Tax	\$2.3 to \$11.3
Vehicle Registration Fee	\$1.8 to \$5.6
Accommodations Tax (Hotel)	\$1.2
Admissions Tax	\$1.2

Of the potential funding sources identified in Table 12, the sales tax option is the most viable for providing local dedicated funding for Greenlink. Currently, there is no special local option sales tax in place in Greenville, and the state allows the implementation of the tax with referendum.

8.2.3 Public Opinion Poll on Transit Expansion and Funding

To gain a better perspective on area citizen's views on the potential for expanding transit services and the associated funding required, a public opinion poll was conducted during the second phase of the study. Greenville County residents' opinions on public transportation were assessed using a scientific telephone survey of 444 Greenville County voters. The survey was conducted April 12 through 19, 2010 and took respondents, on average, eight minutes to complete. The margin of sampling error for results is $\pm 4.9\%$, while the margin for subgroups is slightly higher. One of the subgroups examined was City of Greenville residents. In order to

lower the margin of sampling error for that group and to enhance the ability to generalize the results, an oversample of 100 City residents was included within the larger sample. When speaking of countywide results, the oversample is weighted proportionately. The resulting survey sample is demographically and geographically representative of the Greenville County voter population. A complete summary report of the public opinion poll is included in Appendix E. Significant findings from the poll include the following:

- A small minority (15 percent) of Greenville County voters report ever riding any form of public transportation, with only five percent riding once a week or more.
- Voters who live in the City of Greenville, those who are younger, and those who are nonwhite are more likely than other subgroups to ride public transit. Voters in rural areas and in the southern part of the County are less likely to ride transit.
- Most (65 percent) Greenville County voters have at least some familiarity with Greenlink public transit, though nearly one-quarter (23 percent) say they are “not familiar at all” with it, and another 12 percent say they have never heard of Greenlink or GTA.
- Urban voters tend to be more familiar with the service as do nonwhite voters.
- According to voters, there are several important factors when considering riding public transit. The two most important factors are convenience to one’s home and job, with about two-thirds of voters indicating that each of these are “major considerations.” The two least important factors are the availability of parking and bike racks.
- Younger voters are more likely to consider convenience to home, convenience to work, and sidewalks as major considerations. Nonwhite voters are more likely to consider convenience to shopping areas, availability of bike racks, sidewalks, and whether or not the bus stop is covered as major factors.
- A strong majority (72 percent) of voters indicate that they would support a plan to expand public transit in Greenville County, with 53 percent “strongly” supporting one.
- Voters in the southern part of the county are more likely to strongly support such a plan, along with younger and nonwhite voters.
- Among those who would support expanded public transit, the most popular funding method for the plan is “a special fee collected from certain large businesses,” which receives 74 percent support. An increased sales tax to support transit as well as road and sidewalk improvements received a majority (63 percent) of support.
- Urban residents are more likely than other subgroups to support each of these methods.
- Only 20 percent of respondents said that providing a fare-free transit service (like that provided by the Clemson Area Transit system) would make them much more likely to ride transit. Urban residents, younger voters and nonwhite voters were more likely to ride if there was no fare. A majority (66 percent) said they would be no more likely to ride transit if a fare-free service were provided.

8.3 Public Relations and Marketing Strategies

As part of Greenlink's *Transit Vision and Master Plan*, public relations was utilized to generate awareness among residents, identified stakeholder groups, businesses, community groups and local media outlets. Once the Plan is completed, ongoing public relations and marketing efforts will be critical for achieving positive and ongoing support for Greenlink. As a result of stakeholder interviews and research, it is clear that there is a communitywide need and desire for public transportation. It is also clear the role of public transportation needs to be further defined before the community can embrace and support the system. Public relations can be

used to build credibility and change long-held public perceptions by continuing to develop trust and by educating the community about the role of public transit.

As a rule, the approach to public transportation marketing is very specialized versus marketing other products and services. In South Carolina, as in many other Southeastern states, encouraging people to use transit or “ride the bus” is a challenge, and transit marketing is a critical component of building ridership. Generally, people who use transit, and/or individuals who are considering using transit know exactly what they want and do not want regarding convenience, safety, comfort, cost, and information. The majority of these factors are operational issues, but they also have a tremendous impact on how the service is presented to the public. Establishing effective and dependable levels of service, providing safe and comfortable environments and vehicles, and offering appropriate amenities, are the major ingredients for creating a successful transit marketing program.

The following public relations and marketing strategies are proposed for Greenlink to consider as it moves forward to the next step of its transit plan.

Community Partner Support - Seeking the influence and support of high-profile community partners is one way for Greenlink to gain additional support from local leaders as well as from the community. This is especially important as the issue of funding arises. Community non-profit organizations, such as Greenville Forward and Upstate Forever, are recommended because the goals of both organizations are in alignment with the role of public transportation and maintaining a high quality of life. Forming ongoing partnerships with universities, hospitals, shopping centers, and other large employers is also critical, since these potential partners have a business as well as a community interest in a better transit system. Transit is an important component of Greenville Forward's "Vision 2020" program which was developed by community leaders as a roadmap for the future of Greenville. Executive Directors of both organizations provide the kind of leadership, experience, local knowledge and influential contacts needed to further Greenlink's transit plan. Aligning with such groups can create additional influence with Greenville County as well. Greenlink also has an opportunity to align with Greenville County's "Spare the Air" program which was created in response to EPA incentives and the area's economic development strategy for allowing businesses in sprawling areas to grow.

Community Transit Task Force - Expand upon the existing Steering Committee or assemble an informal board of high-profile community leaders who have an invested interest in the success of mass transit. Actions to rebuild community trust should begin with the unveiling of the *Transit Vision and Master Plan*. The task force or advisory committee could assist Greenlink with continued efforts to re-educate the public about the benefits of an improved public transportation system.

Sponsorships/Partners - Important to strengthening credibility and building support is to partner with a high-profile, valued organization or group. The City's involvement has positively impacted the Greenlink brand but moving forward, it will be important for Greenlink to be identified with a "cause-related" group. Participation in very visible community projects can be a simple and cost effective method for improving Greenlink's image in the community. An example is volunteering for local community projects such as participating in local runs/walks and stuff-the-bus campaigns.

Market Research - Conducting market research is one of the first steps in developing an effective marketing program. An initial phase in this process was implemented for Greenlink during the development of the *Transit Vision and Master Plan* process. Public meetings, customer and community surveys, as well as telephone and personal interviews were conducted to reach out to the public, opinion leaders, and stakeholders, the results of which are well documented. Stakeholder and community surveys and public meeting comments clearly indicate strong support for public transportation. A majority of the responses about current efforts to revitalize the area's transit system were favorable; however, respondents also voiced concerns that much work remains before Greenlink becomes a service that will attract a wide range of customers. Community and current customer survey comments were focused on service levels; however, stakeholder interviews frequently mentioned a need for more information/marketing, repairing the system's image and rebuilding trust in the community. This type of feedback is critical, not only for developing a marketing program, but for the purpose of obtaining valuable feedback from the community with regard to all aspects of the service.

Continuing efforts to reach out to the public should be accomplished on a regular basis in the following ways:

- On-board comment forms and/or surveys should always be available to current customers.
- A web-based survey should be posted on the Greenlink web site. Incentives should be offered to encourage the public to provide feedback through the web survey.
- Focus group sessions should be conducted with stakeholders annually during the first several years of rebuilding the system's image and while implementing new services.
- Approximately one year after the implementation of a marketing program, focus group sessions should be conducted with current and potential customers. Participants should be asked to review maps and schedule brochures, how-to-ride information and other printed materials as well as to comment on their perceptions of marketing campaigns. This will allow Greenlink to evaluate the effectiveness of the program and determine what direction to take for future efforts.

System Image - The introduction of the new Greenlink brand has been an excellent first-step in presenting a fresh image to the public. The brand reflects the character of the area while offering multiple opportunities to take advantage of marketing trends such as conveying the message that the system is environmentally friendly. Additionally, the vehicle paint scheme is simple but very attractive and well designed to accommodate bus advertising without obscuring the Greenlink logo and contact information. Bus stop signs are equally simple but very customer friendly as are route schedules. The entire branding package is very crisp and graphically effective.

Not unlike several other areas of South Carolina, transit in Greenville has a troubled history. Over the years the public has basically been educated that it cannot depend on public transportation and this mindset must be reversed before Greenlink can gain the public's support and build a wider customer base. As noted above, the introduction of the new image is a good first step but, re-educating the public to feel it can depend on the Greenlink service will most likely be a long and involved process. Steps to improve the Greenlink system image include:

- Develop key benefit messages regarding the role of mass transit and require that these messages are used consistently within Greenlink and in all marketing and communications.
- Themes are often used to help organizations connect with large audiences regarding an important benefit or cause. Greenlink should develop a compelling rally cry which motivates and generates support.
- Keep the public informed about goals and successes thus positioning Greenlink as being concerned about its customers and dedicated to responding to the needs of the communities it serves.
- Customer information – developing and disseminating how-to-ride information that contributes to the retention of current customers and attracting new customers is critical to any transit agency. While this type of information is posted on the Greenlink web site, many individuals do not have access to computers. The results of stakeholder interviews and community surveys indicate a need to ensure that printed information about the service is widely distributed to the public.

Marketing Support - Currently, Greenlink is dependant upon the City of Greenville to assist with producing basic marketing materials such as service alerts, fliers, and press releases. However, while the City provides excellent support when needed, these services are provided on a first-come, first served basis. Truly effective public transportation marketing requires a consistent and dedicated effort to keep the public informed about services offered while promoting the system to riders, potential customers, and supporters. To enhance public relations and marketing:

- Greenlink should either designate someone on staff with this responsibility, or retain an outside marketing firm to assist with basic marketing and public relations efforts. Another alternative would be to solicit the assistance of local universities to provide marketing interns.
- Develop a strategic marketing/public relations plan. The plan serves as a communications roadmap for improving Greenlink's image in the community.
- Transit marketing should be a structured and on-going process based on marketing research and with constant attention to the needs of the community. A comprehensive marketing plan should be developed to include but not be limited to recommendations regarding:
 - Development of professionally designed route maps/schedules, system updates and rider alerts, posters/fliers, how-to-ride brochures for fixed route and paratransit services, etc.
 - Effective use of the media (i.e. radio/TV/print)
 - Methods for soliciting the support of public officials on the local, state and national levels.
 - Specific marketing campaigns and promotions
 - Public relations opportunities
 - Development of business and student programs.
 - Strategies for:
 - Continued efforts to rebuild community trust.
 - Identifying and reaching out to designated target markets.
 - A more thorough development of Greenlink as a "green" alternative to driving and the environmental benefits of using the system.

Comprehensive Public Relations Program - Develop a well-orchestrated public relations (PR) program which addresses communication strategies between Greenlink and the community, local media, stakeholders, internal, etc. A PR program may include a Public Service Announcement Campaign.

Communication Tools - Leverage communication tools such as the Greenlink newsletter and opportunities within the City's Communication Division which, if delivered consistently, can be an effective way for getting the message out. In addition to the Greenlink newsletter, other tools include meetings with the media, op-eds, advertorials and strategic sponsorships. Customer friendly how-to-ride information is critical to attracting and retaining transit ridership. Well designed maps and schedules and informational brochures are important marketing tools and should be liberally distributed throughout the service area. Recommendations include:

- All printed marketing materials should include the accessibility symbol.
- When possible photos of persons with disabilities using both fixed route and paratransit services should be incorporated into the design.

Community Outreach - Greenlink currently has a Community Outreach program which provides ways for the public to connect with Greenlink through school programs and partnerships within the community. Greenlink can leverage these programs further by promoting these efforts through the media as well as utilizing Greenville City's communications vehicles.

Web Site - The Greenlink web site is attractive and well designed with good how-to-ride information, operating hours, several photos of the buses, and updates about service improvements. The following are offered as suggestions for improvements to the site:

- To better accommodate individuals with visual disabilities, offer the option of bypassing the photos, etc. and going straight to text.
- The Title VI Policy appears to be the only area of the web site that can be translated to Spanish. As a Spanish language option is provided on the Greenlink telephone system, an option for translation to Spanish should also be offered on the web site. This can be done at no expense; however, all text must be developed in a Word document as pdf files cannot be translated.
- The City of Greenville has developed two very nice videos to promote bicycles on buses benefit as well as to inform the public about the new shelters. The videos are available via a link from the Greenlink web site. After viewing both videos, the following two minor observations are offered:
 - The bus used in the instructions for the bicycle rack segment appropriately has "Welcome Aboard" on the marquee. However, it also flashes the words "Out of Service". While it is understood that the bus is being used for demonstrating the bicycle rack procedures, it is recommended that the marquee reflect a specific route in all future promotional or educational videos and/or photographs. A printed brochure with bicycle rack instructions should be developed to complement the video.

- Recommend enlarging the system map and providing more information about Greenlink on the new bus shelters. Ideally, the shelters should include route specific schedule information.

Referendum - During the stakeholder interview process, respondents indicated that a referendum to generate funding for public transportation would not be practical at this point in time. However, as previously referenced, the survey poll of Greenville County registered voters indicated that an increased sales tax to support transit as well as road and sidewalk improvements received a positive response. It is clear that a future referendum will be necessary to establish a dedicated funding source to support the type of expansions and improvements cited during the interviews and survey responses. Transportation systems throughout the country have had great success in recent years with this process. After four attempts, Charleston County is the only county in South Carolina to obtain voter approval of a dedicated local funding source for public transportation. At such time, as Greenville County determines the need to include transportation funding on the ballot, the following points are offered to assist in informing the public about referendum issues:

- As cited earlier in this report, organize a Community Transit Task Force to plan strategies to encourage voters to support the referendum. The task force would also be responsible for assisting Greenlink in raising funds to support marketing efforts. In addition, the task force should conduct a detailed funding analysis study to prepare for undertaking a sales tax referendum. Members of the task force should include but not be limited to individuals from the business community, environmental groups, organizations such as the League of Women Voters, and current customers.
- Develop either an independent web site, or a link to the Greenville County/City of Greenville and/or Greenlink web site with information the public can access about the issues involved in the referendum. Provide links to the site on other related web sites.
- Establish a speaker's bureau.
- Develop talking points and Power Point slides that stakeholders can use to support presentations about the referendum at local agency and organization meetings.
- Develop printed materials that can be distributed to the public outlining the benefits of supporting the referendum; i.e. direct mail, fliers, and newspaper advertisements.
- Develop television and radio advertisements to educate voters about the need to approve the referendum.
- Organize a series of public meetings and/or work with local groups such as the League of Women Voters to organize forums to educate the voters about the issues involved with the referendum.

8.4 Federal Transit Administration (FTA) Regulations

FTA has many regulatory and reporting requirements for public transit agencies. FTA regularly audits public transit agencies through a Triennial Review with FTA regulators and accountants. The most recent Triennial Review for GTA/Greenlink took place in 2009. During a Triennial Review, the FTA reviews the 24 categories of regulations and ensures that the agency has met the minimum requirements for each section. The categories included in the Triennial Review are:

- Legal
- Financial
- Technical
- Satisfactory Continuing Control
- Maintenance
- Procurement
- Disadvantaged Business Enterprise
- Buy America
- Debarment/Suspension
- Lobbying
- Planning/Program of Projects
- Title VI
- Fare Increases and Major Service Reductions
- Half Fare
- Americans with Disabilities Act
- Charter Bus
- School Bus
- National Transit Database
- Safety and Security
- Drug-free Workplace
- Drug and Alcohol Program
- Equal Employment Opportunity
- ITS Architecture
- ARRA

Although the list of categories examined during the review is extensive, some categories are not pertinent to each transit agency its review period. For instance, many smaller agencies do not purchase vehicles every three years. Therefore, the Buy America section of the review would not necessarily apply during each three year review. According to a presentation on the FTA Triennial Review website, the most common areas of findings from the reviews performed in 2009 included technical, procurement, drug and alcohol program, maintenance, satisfactory continuing control, and financial. GTA/Greenlink is currently in good standing with FTA and had no major findings during their last Triennial Review.

8.4.1 Regulatory Requirements

The majority of the recommendations for new and improved service for the Greenlink include local and express bus transportation. One of the recommendations that will require additional resources from the transit authority is the introduction of BRT to the transit system. BRT provides a low-cost alternative to various rail modes of travel. BRT uses rubber tire buses that navigate along improved sections of roadway, within fixed guideways, or on dedicated lanes to quickly and efficiently move passengers between activity points.

One of the most important aspects of introducing such an innovative service to the Greenville system is the funding. The most recent federal transportation legislation, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), provided localities with a new option for funding a project that is more expensive than local bus service, but is not quite to the scale of a new rail line. The FTA Small Starts Program is funded through

the New Starts Program and is intended for projects, such as BRT, that are less than \$250 million in total cost, with less than \$75 million in requested Section 5309 funding. Section 5309 is the Capital Investment Grant program.

In addition to the funding limitations of the program, the project must meet one of the following guideway criteria in order to qualify for the Small Starts program:

- Be a fixed guideway for at least 50 percent of the project length in the peak period; and/or,
- Be a corridor-based bus project with the following minimum elements:
 - Substantial Transit Stations
 - Signal Priority/Pre-emption (for Bus/LRT)
 - Low Floor/Level Boarding Vehicles
 - Special Branding of Service
 - Frequent Service (10 min peak/15 min off-peak)
 - Service offered at least 14 hours per day

As with most federal programs, there are many limitations and qualifications to contend with in order to receive the funding. However, without the federal participation, most programs like BRT would not be feasible at the local level.

8.4.2 Grant Application Guidance

As a large urban transit system (over 200,000 in population), FTA is a Direct Recipient of federal funds through several programs including the 5303 Metropolitan Planning and 5307 Urbanized Area Formula Programs. Other federal programs available to the transit authority that should be considered in the identification of funding for the recommended service include:

- 5309 Capital Discretionary Program (New and Small Starts)
- 5310 Transportation for Elderly Persons and Persons with Disabilities
- 5311(f) Intercity Operating, Capital, Planning and Marketing Assistance
- 5316 Job Access/Reverse Commute (JARC) Program
- 5317 New Freedom Program

Each of these programs has specific requirements and qualifications in order to access the funding. Applying for a grant requires the use of the Transportation Electronic Award Management (TEAM) system. GTA has access to this system and is able to manage the awarded grants through the TEAM system. GTA is required to be current on all federal regulations in order to submit grant applications through this system.

Appendices